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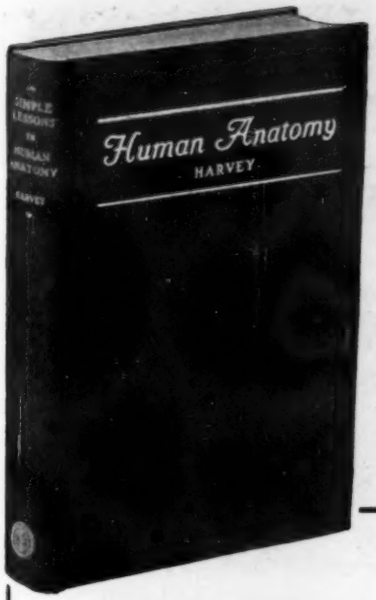

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JANUARY
1936

EDITORIAL

Tuberculosis

IN 1880, tuberculosis caused 326 deaths for every hundred thousand people in the United States. Now it causes only 60 deaths for every hundred thousand people. The improvement has resulted from application of the scientific knowledge, which has been developed since that time, for the prevention and the treatment of this disease. On March 24, 1882, a little over fifty-three years ago, Robert Koch, famous German medical investigator, announced the discovery of the germ that causes tuberculosis. In 1884, fifty-one years ago, Edward Livingston Trudeau found that he had tuberculosis. It had apparently developed while he was nursing his brother. He subsequently established at Saranac, N. Y., the first sanatorium for the care of the tuberculous in the United States. In a speech delivered just before he died Trudeau said, "Over the doors of the hospitals for consumptives twenty-five years ago might well have been written these words, 'All hope abandon ye that enter here.'" Today in the light of new knowledge we may justly place at the entrance of the modern sanatorium the more hopeful instruction, "Cure sometimes, relief often, comfort always."

Today there are 1,204 sanatoriums, departments and preventoriums for the tuberculous in the United States. They provide approximately 100,000 beds for treatment, and there are 7,000 additional beds in prospect. *The Journal of the American Medical Association* recently published a special tuberculosis number containing a list of all the institutions devoted to this disease in the United States, the number of beds available and all the other facts about tuberculosis that all those concerned with this disease, particularly doctors interested in its care, have to know.

We believe there are about half a million children in the United States with tuberculosis and perhaps another million suspected cases. The manner in which we take care of these will determine how much tuberculosis we are going to have in future years. Tuberculosis was the first cause of death in Puerto Rico for the year that ended December 1934. In our own country it was seventh among the causes of death. In other countries, tuberculosis has had a downward trend, but in Puerto Rico it has had a steady rise, reaching 295.3 deaths for each hundred thousand of population in 1934. This is more than our rate was in 1900. It contrasts with the present rate of approximately 60 in the United States. The important factors responsible in Puerto Rico are overcrowding in large cities from lack of employment, the low economic status of the people and a lack of hospitals and sanatoriums for the care of those with the disease. Tuberculosis is a disease of poverty. Money is required for its control. The protection of human beings against tuberculosis is based on two principles: First, prevent infection of the child by removing him from contact with those who have tuberculosis; second, take care of those who have tuberculosis, and educate the sick in the prevention of disease.

SOME twenty-five years ago a postal worker developed the idea of a seal to be sold at Christmas, the income from the sale of this seal to be applied to the campaign against tuberculous disease. These seals have been made available throughout the country. Each year the public is given the opportunity of sharing in the fight against tuberculosis. Every penny spent on a Christmas seal means increased opportunity to prevent some one from having tuberculosis and increased likelihood of recovery for some one who has the disease. You can help to fight tuberculosis in this way: Do what you can to help the sale of the Christmas seal, and buy all the seals that you possibly can as your own contribution.

DOES ILLNESS BEGIN AT FORTY?

By Samuel Morrison

IS IT a mere coincidence that 40 marks the age at which the majority of individuals begin to see the physician more frequently? In many of these patients, manifest organic or functional disease is promptly discovered, and the question arises in the physician's mind whether earlier examinations could have prevented the chronic illnesses from which these patients will probably continue to suffer. Young persons usually pay slight attention to early symptoms. Example on example is available of diseases of every category which could have been cured had the patient correctly evaluated their early manifestations.

One obvious reason for this failure to secure adequate management of early disease is the ability of youth to resist disturbing symptoms temporarily. Youth seems to be invulnerable. At 40, however, the accumulation of repeated mild illnesses begins to present symptoms which are more disturbing, less intermittent, and for the first time very significant as far as the host's general health is concerned. Perhaps, then, chronicity has become the predominant observation. It would seem therefore that the actual turning point from youth to age, from the standpoint of susceptibility to chronic disease is 40. The only saving factor in preventing chronic or serious illness at and after 40 is the present tendency toward periodic examination. In the periodic health examination, leads must be discovered; early symptoms and signs must be searched for and their significance determined. Keen judgment is required so that slight changes will be neither overevaluated nor underevaluated.

The type of disease that may begin at 40 excludes all the usual diseases of childhood. The diseases which may develop at this time have a determining influence on the length of life as well as on its mature efficiency and well being. The disease processes are less amenable to treatment and the protective mechanisms of the body are less prepared for war against invading cells, bacteria, toxins and other destructive agents. A happy, healthy later life depends therefore on the detection and treatment of disease prior to the age of 40.

The physician must discover early disease in its hidden form by telltale clues much as a keen detective must observe effect and cause. Granting that the patient cooperates by making early application, the medical profession must contribute by enumerating the symptoms and signs of early disease. Perhaps some campaigning on periodic examinations before 40 is in order. Its purpose is not to frighten every one with the thought of cancer but to explain the importance of taking the time, no matter how important the daily work may be, for the examination. Rather a day's work lost now than years of invalidism later. If one's life is to be prolonged it should be made worth living. It has been said, "The time to treat old age is during middle life." Consistent care in youth, adolescence and maturity up to 40 will make it unnecessary to treat old age during middle life.

UNFORTUNATELY HYPERACIDITY IS FREQUENTLY MADE TO RESPOND TEMPORARILY TO SODIUM BICARBONATE, WHILE ITS DEGREE, ASSOCIATED SYMPTOMS AND DURATION ARE IGNORED.

PERIODIC health examinations are a means by which early changes toward the abnormal may be discovered. Many diseases advance so gradually that they are not noted by the host. Critical periodic examination discovers these cases before the patients have become obviously ill. Many observations that seem trivial to the patient are of the deepest significance to the examining physician. Overindulgence in food, which marks the way to obesity, diabetes and gout, may be prevented by early medical and

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dietary instruction. Many digestive symptoms can be allayed before they become persistent and indicate definite disease. Heart, kidney and glandular disturbances can also be helped or arrested before they have become incapacitating or dangerous to life. In other words, old age cannot be prevented, but the mature years should be filled with strength, health and happiness, for "without health, life is not life, life is lifeless."

There should be no basis for the expression, "By 40 the average woman is exercising with little but her tongue, and the average man with little but his teeth." It is well known that the younger person needs exercise and that the person of 40 needs exercise, too, but in smaller amount. This smaller amount of exercise, however, is more essential to him than the larger amount is to the younger person. This is understandable when one realizes that the physical reserve necessarily becomes diminished and that the machine begins to show signs of wear and tear after forty years.

THERE are some changes which are to be expected with advancing years. Among these, arteriosclerosis, or hardening of the arteries, is easily recognized. Arteriosclerotic changes are rare before 40, and though there are exceptions it is definitely a disease of middle and later life. Similarly a large number of cases of diabetes are discovered between the ages of 40 and 50. In such cases careful inquiry and investigation would make it appear that the disease may have been present in a dormant or relatively asymptomatic stage for from two to four years and perhaps longer.

Authoritative authors have written that the number of sufferers who are bedridden or housebound in old age as a result of diseases of the respiratory tract would undoubtedly be materially reduced if chronic bronchitis was not so generally regarded as an unimportant or possibly unavoidable accompaniment of advancing years. A proper appreciation of the possible seriousness of this condition would no doubt result in the prolongation of life by reducing the mortality from pneumonia in later life.

Middle life marks the period when most of the more serious forms of gastric disturbances first become manifest. Frequently their onset is so mild and the symptoms are so insignificant that their importance may be completely overlooked until late in their course, and then only after alarming symptoms have already developed. Again careful investigation will discover that many of these disorders have their origin in youth. Often the symptoms are extremely transient and insignificant at first; later they become slightly more persistent or perhaps are punctuated with remissions, and finally they present serious manifestations in middle life when the transition from benign to malignant states is so commonly observed. If a comparison is made between the gastric disorders of youth and of middle life it becomes apparent that the acute types are more frequently observed in the young while the more chronic forms are more frequent in adults. This may be due to the fact that the causative factors leading to the disease have not been sufficiently potent as yet to make serious inroads into the younger patient's health. Later the disease influence may become so continuous as to produce organic manifestations.

Indiscretions in food and drink as well as the abuse of tobacco are often potent factors in the development of gastric disturbances of middle life. Such errors in diet may include the consumption of excessive amounts of food which is often imperfectly masticated, too rapidly bolted and taken too hot or too cold; food that is overrich, highly spiced, fermented or decomposed, introducing micro-organisms into the stomach; unripe or overripe fruits; excessively cold drinks; excessive use of condiments, and overindulgence in alcohol, coffee or tea. When food is consumed too rapidly or is insufficiently masticated the masses entering the stomach are difficult to dissolve in the gastric secretion and act as irritants to the lining of the stomach. Hyperacidity is often induced by indiscretions in diet and the abuse of alcoholic drinks and tobacco. Moderate overweight may not be a serious handicap in youth, but statistics show how materially it affects persons of or beyond middle life.

IN ORDER to bring out more clearly the importance of discovering and treating early manifestations of disease a few case histories are briefly outlined. The first case is that of a young man, 27 years of age, who for some years has had a yearly examination by excellent physicians. He was always found to be normal in every way, and his array of complaints was interpreted as an expression of nervousness. He realized that he was high-strung, but he accepted the diagnosis of "nervousness" with some doubt and misgivings. It was subsequently discovered that he was suffering from a mild deficiency of thyroid. His digestion was not normal, for he experienced discomfort, or rather a fulness, after eating a moderate meal. His mental responses were definitely inactivated temporarily, and he often sensed a feeling of warmth at this time. Exercise, such as running, or any exertion which stimulated perspiration revived him. His digestion was particularly capricious when protein food formed a major part of his diet. He had reached the stage where he avoided most of the proteins. Physical exhaustion was also a prominent symptom. The observations on examination were so meager that any one would easily understand the conclusion that he was in good health. His thyroid

IN COLLEGE HE KNEW THAT HE HAD VALVULAR DISEASE OF THE HEART, BUT THERE WAS SO LITTLE EVIDENCE OF IT THAT HE PLAYED FOOTBALL AND ALSO ENGAGED IN TRACK WORK.

gland was not enlarged; his weight was normal; the pulse tended to be rapid, and the pupilary reactions were normal. There was some slight abdominal tenderness, but in general, organ for organ, he seemed to be all right. A basal metabolism test showed a slightly reduced rate, and a gastric analysis showed slightly decreased digestive juices. The remarkable observation was his response to thyroid therapy. He became an entirely different individual and was himself aware of his changed disposition. With a balanced protein intake and small doses of thyroid his reactions became normal.

This case stresses the importance of discovering such illnesses early in life. This young man of 27 would probably have become sluggish, inefficient and "neurasthenic" in early middle life without the benefit of proper therapy. Such cases are unquestionably common. They may remain undiagnosed or wrongly diagnosed for a long time probably because they are not clearcut or because they are subclinical; that is, they do not fit the usual description of the disease. In this case a further good piece of work was done by examination of the other members of the family all of whom showed varying degrees of thyroid dysfunction. It is possible to discover other forms of glandular disease early enough to treat them before they have interfered with normal function. An index of suspicion and a correct evaluation of symptoms and signs are the keynotes to early discovery of disease.

NUMEROUS examples can be given of almost every type of disease. Perhaps early nondescript symptoms often are significant but are either ignored or treated symptomatically. Another young man of 27, who was overweight and who two years previous to examination had a catarrhal jaundice, suffered from persistent digestive upsets which were minor in type but were always referred to the gallbladder area. In view of the obesity and the history of definite catarrhal jaundice it was quite apparent that gallbladder infection, liver disease or some other hepatic infection of a chronic nature was likely to develop unless he was treated for that underlying disease, which was evidently just beginning. Such treatment, however, presupposes a complete examination in order to discover how far the disturbance has progressed. Because he feels relatively well, such a patient is not eager to be examined or treated. If he is impressed with the possible later developments in his ailment and if the condition is carefully explained to him, then he doubtless will cooperate in eradicating its early manifestations in order to prevent chronic, or perhaps serious, disease in later life.

IN ANOTHER case the patient had periodic attacks of abdominal pain which he usually attributed to any change in his daily routine occurring at the time of the attack. As a matter of fact the attacks were definitely periodic and simulated the ulcer group of symptoms. However, careful examination including x-ray studies did not substantiate this impression although anti-ulcer therapy did bring about improvement during the period of disturbance. As time went on, the patient began to present gallbladder symptoms, mild in character, but definite enough to require investigation of that organ. The important fact in this case is that a young man who had symptoms which he called "belly ache" was quite willing to "let it go at that." If he had done so, his symptoms would probably have become progressive and some day, perhaps after he had reached 40 years

of age, an obvious disease would develop. Early investigation and treatment offer every hope for cure by relatively simple medical measures whereas later, even surgery may not eradicate a disease which has become chronic.

In the case of a young woman an appendectomy was done, and during the operation the gallbladder was found to be filled with stones. The gallstones may have been silent, but it is likely that such a gallbladder, unless discovered by x-ray, could have remained in her until about the age of 40 when it would have become troublesome. An operation at the later time of life might not have been so favorable. Fortunately the surgeon investigated the gallbladder area of the young patient and removed both the organ and its contents as potential sources of trouble.

When one realizes how many cases of cancer of the stomach are inoperable when discovered and how frequently the disease occurs, and when one understands that the groundwork for the development of cancer is probably laid years before it becomes manifest, then the importance of careful periodic examination by a physician makes an indelible impression. The thought, "Illness begins at 40," which implies that its groundwork must be laid before that time, need not make one cancer conscious or cancer anxious and fearful, but it should make clear the fact that freedom from disease after 40 depends, with exceptions, on personal care before 40.

MUCH could be written concerning susceptibility and the lack of resistance in patients above 40 compared to those under 40. The physician repeatedly sees infected mouths, teeth and throats which are taking daily toll but have not been treated, principally because thus far the individuals have not begun to suffer any serious symptoms. Infected teeth, admittedly sources of danger, are often retained because their extraction may interfere with the facial symmetry of their owners. While this external symmetry is being maintained, internal symmetry is waging a losing battle against the onslaught of toxin and infection whose strongholds are in tooth sockets. The consequence is so evident that elaboration is unnecessary. Serious trouble could have been prevented had common sense prevailed.

A man, who at the age of 38 showed evidence of cardiac decompensation, or heart failure, which could have been prevented if he had taken care of himself at an earlier age, had been a victim of chorea, St. Vitus' Dance, in childhood. When in college he knew he had valvular disease of the heart, but there was so little evidence of it that he played football and engaged in track work. During this time his heart did not complain, although there was no question that he was overworking it. As he grew older he gained until he weighed over 200 pounds, about 50 pounds above his ideal weight. Now, many years later, he is definitely invalided. True, he will be able to go along for years under medical supervision. Nevertheless he has sacrificed several years of his life either because he was not properly directed in adolescence, or, what is more than likely, because he did not feel ill enough to consult a physician until the symptoms became so severe and persistent that medical aid became almost an emergency measure.

Minor ailments such as hyperacidity, repeated infection of the upper respiratory tract and emotional disturbances frequently culminate in an organic disease such as ulcer. Hyperacidity is frequently made to respond temporarily to sodium bicarbonate while its degree, associated symptoms and duration are ignored. It is no small wonder that ulcer symptoms may develop with possible complications. Chronic or repeated infection may give rise to a number of diseases, and in the case of emotional disturbances not only may existing disease be aggravated but an entirely independent series of psychic, secretory and motor disturbances may develop.

A man, 31 years of age, suffered from vague digestive disturbances which he attributed to nervousness. The symptoms of his so-called nervous indigestion consisted of an acid feeling, some abdominal pain and temporary relief following ingestion of sodium bicarbonate. He attributed the condition to the nervous strain under which he had recently been. The patient also reported that pain in the pit of the stomach interfered with his sleep but could be relieved by sodium bicarbonate and sometimes by food. Physical examination showed that he was healthy in every respect except for one suggestive sign, tenderness in the pit of the stomach. Further studies showed a great excess of acid in the stomach, and the x-rays revealed a definite ulcer in the duodenum. This patient might have continued to withstand his "nervous indigestion" for some years, but the probabilities are that the ulcer symptoms would have become so prominent as to make medical investigation an urgent necessity. On the other hand, perforation or gastric hemorrhage might have marked the presence of the ulcer without any other warning signs or symptoms except the "nervous indigestion." Many cases of nervousness manifest themselves as organic diseases at 40. If organic trouble is discovered before the patient is 40, there is every possibility that the disease is in its remediable stage.

THE problem of maladjustment often becomes urgent at 40. Perhaps through lack of social or professional accomplishments, or through loss of physical attraction, resulting possibly in marital incompatability, or through reverses or deaths among intimates, psychoneuroses or more profound emotional disturbances which

have been hidden for some time may suddenly become clearly recognizable at or after 40.

Adaptability and readjustment are of infinite importance in determining healthful longevity. For example, before they reach 40, many persons excuse themselves for lack of accomplishment, for most young people have set 40 as a goal at which they will have attained some form of recognition. When it does not materialize, emotional disorders may ensue unless the personality and adjustment factors of the individual are adaptable. As a rule the management and conservation of physical and emotional energies before 40 spell the degree of general vitality after that milestone is passed.

Another example of the importance of adaptability and longevity lies in the frequency of what in medical terminology is known as cardiovascular renal disease. Hardening of the arteries is clearly an illness of later life and often brings in its wake both heart and kidney changes. Arterial change apparently comes on gradually, causing few discomforts until periodic examination or advanced disease reveals it. The blood vessels may be hardened to such an extent that the diagnosis can be made by palpation. Hypertension, or high blood pressure, may suggest thickened blood vessels, or changes in the heart and kidneys may lead directly to the discovery *(Continued on page 87)*

Curious Stories About Health

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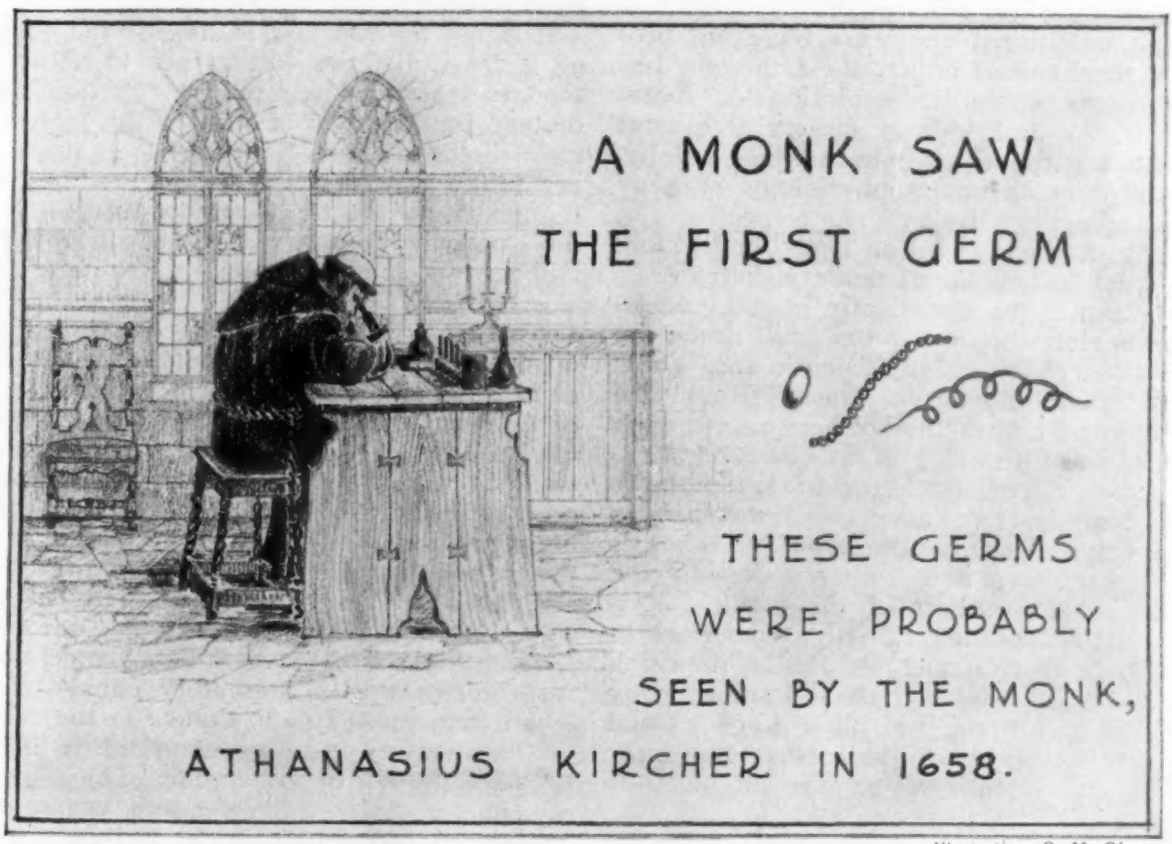


Illustration, O. M. Olsen

A SCHOLARLY and versatile Jesuit priest, Athanasius Kircher (1602-1680), was probably the first person to study disease with a microscope. In 1658 he reported that he saw living organisms, which he called worms. It is not improbable that he was the first to see a germ although he used only a 32 power microscope. Kircher said these so-called worms could be found in the blood of patients suffering from plague. Although this observation is questionable since it is now thought that the "worms" were pus cells and forms of blood cells, Kircher was one of the first, if not the first, to formulate accurately a germ theory of disease causation.

About fifteen years later, in 1673, a Dutch lens grinder, Leeuwenhoek, developed a higher powered microscope and made the first substantial discoveries of micro-organisms.

The 1936 Models in Diet

By CLARENCE W. LIEB

MORE PEOPLE are living today on obsolete dietary models than are riding in outmoded automobiles. The health accidents resulting from the former would, I venture to say, greatly outnumber the casualties due to the latter.

Automotive engineers vie with one another in perfecting their respective makes of cars. Comfort, efficiency, economy and eye appeal are the conditioning factors that comprise the nearest approach to the perfect car. This extraordinary synchronized mechanism is the result of the pooled knowledge of thousands of minds and the reciprocal aid of several of the sciences. Standardized production is the rule, but individual tastes are not overlooked.

Though nutritional engineers have not produced a mechanized entity, their thought has gone through a similar evolution or metamorphosis, so that today's dietary treatment represents a composite whole in which botany, biology, physics, chemistry, physiology, anatomy and even genetics all play their respective and important interlocking rôles. Individualization, however, is the keynote of modern dietetics.

All of us are too dietetically casual. Gullibility runs riot when our nutritional needs are under consideration. Many listen to any "Tom" Abrams, "Dick" Locke or "Harry" Hays who may promote a new method of healing, although their respective technics of mechanized diagnosis, laying on of hands, or food combining fads are entirely at variance with the principles of common sense or scientific proof. It is somewhat discouraging and embarrassing to the most altruistic members of the medical profession that a few men with the legal right to add M.D. to their names should be imposing on the credulities of the sick and suffering by robbing them not only of their hard earned money but of their chance to be cured by timely diagnosis and scientifically approved methods of treatment.

Present-day concepts of the cure of special disease conditions are quite different from those current a few years ago. Today the physician is not satisfied with merely telling a patient what he should not eat. His advice is positive, not negative. He tells him what he should eat. "You must include the following foods in your diet and, with these as a dietary nucleus, build up an appetizing menu." Every diet must be as carefully individualized as are eyeglasses. The wise physician not only will bear in mind the nature of the particular disease his patient has but will ask himself what kind of a patient has the disease. Two brothers may have diabetes, and both may require insulin; but the general psychologic and dietetic handling of these patients may be quite different.

Another vital factor in dietary prescribing is to avoid thinking exclusively of the local condition and to think of the patient as a whole. Nutritional planning which builds up the health and resistance of the individual will generally affect the local condition favorably. Sinus infection, dental disease and chronic tonsillar disease often respond favorably to an improvement in the patient's general nutrition after local treatment has signally failed.

It is not my purpose to discuss the question of general dietetics but rather to show how modern research has thrown a new light on the dietary treatment of several of the more common diseases. It is hoped that all those who are following the older dietary methods, even though they have the stamp of medical orthodoxy of a decade ago, will go to their physicians and have their diets brought up to date.

AN EXCELLENT example of the changed attitude of the profession in the dietetic treatment of disease is demonstrated by the modern method of treating typhoid. Many may remember the almost fanatical restriction of food in the diets of such patients. The delirium, the distention and suffering and the stupendous mortality among typhoid sufferers two decades ago, compared to the milder symptoms and greatly reduced death rate of today, is noteworthy. The difference lies in the diet. Today, physicians think of the patient as a whole, not for instance, of the inflammatory changes in the small intestine. Today, thanks to the regimen of high caloric feeding, typhoid is not the dreaded disease of yesteryear. The physician, of course, still avoids feeding coarse fiber-containing foods that might irritate the congested areas in the intestines and produce hemorrhages.

Vilhjalmur Stefansson, the Arctic explorer, once saved his own life when he lay dying of typhoid in the Arctic nearly a quarter of a century ago. He was under the care of a missionary who gave him the usual limited diet described in the latest medical book in the mission library. Suffering intensely and reduced to skin and bone for want of food he

demanded a greater variety and quantity of food. On being repeatedly refused by the missionary for fear that such a diet would result in hemorrhages and death the sick man bribed his attendant to take him by dog sled to the nearest hospital 140 miles away. It was nearly two weeks before Stefansson reached the hospital. During this time he ate practically nothing but rotten, raw fish. Strangely enough, he gained 40 pounds and was practically well on his arrival. Of course, one would not recommend raw fish, particularly rotten raw fish, as a standard typhoid diet. Nevertheless this diet had at least three major advantages: The fat and protein were easily digested, and they left little residue; the caloric value was high, and the diet was rich in vitamins A and D on account of the oil content.

THE diet in Bright's disease has also changed decidedly in recent years. Formerly the whole purpose of treatment was to spare the kidneys by the drastic elimination of all protein food such as meat, fowl, fish, cheese, eggs and even vegetables with high protein content, such as peas, beans and lentils. Every one with even a "touch" of Bright's disease then was doomed to fare meagerly on the very foods which today he is encouraged to eat. Why? Because it is now known that after an unrecovered loss of protein in the body the patient becomes weak, his resistance is lowered, and recovery is retarded or actually prevented. One cannot really appreciate what this dietary change means to a patient with Bright's disease unless one has seen the smile of gratitude on the face of a half starved patient when he is given the juicy piece of steak for which he has so passionately longed. The results of such an addition to the diet are often quite astounding, ending in a complete mental and physical renaissance. This does not mean that meat is a cure for Bright's disease. Before any change of this kind is made in the diet, the physician's counsel should be sought, for a special condition may be present in which meat restriction is necessary.

PATIENTS with high blood pressure, with or without kidney changes, at one time had their diets so restricted that the eating of an egg or a chop was considered a dietetic crime of the first magnitude. Much unnecessary invalidism resulted from such a one-sided diet. The medical aim should have been to give balanced rations within the digestive capacity of the patient and to increase vitality and resistance as much as possible. Vegetable proteins do not have nearly as high a biologic value as do meat proteins, in spite of the literary standing and ripened years of Mr. George Bernard Shaw. Moderate consumption of animal protein with an otherwise balanced diet best conserves the health and strength of the individual of three score years and more who has high blood pressure.

Several years ago the treatment of ulcer also consisted of placing the patient on a diet which kept him in a state of partial starvation. This dogmatic, iron clad German method was followed by well intentioned English and American doctors until it was found that a liberal diet was better for these patients because it built up their resistance and kept them in a state of nutritional equilibrium. Weak, undernourished patients with ulcers have become ready victims

ONE CANNOT REALLY APPRECIATE WHAT THIS DIETARY CHANGE MAY MEAN TO THE HALF STARVED PATIENT UNLESS ONE HAS SEEN THE SMILE OF GRATITUDE ON HIS FACE WHEN HE IS GIVEN THE JUICY PIECE OF STEAK FOR WHICH HE HAS SO PASSIONATELY LONGED.

of tuberculosis, sinus trouble and other distressing ills. In one case such a patient contracted pellagra, a distressing nutritional disease accompanied by skin manifestations which is attributable largely to a vitamin deficiency in the diet.

The present-day treatment of tuberculosis is another example of how dietary concepts have changed. In former days the achievement of obesity or at least an approach to it was looked on as the indication of successful treatment in this disease. Now surplus weight is considered a curative handicap. It is realized that overweight patients are often anemic; that their resistance sometimes goes down as their weight becomes excessive, and that their circulation often suffers as the result of placing too heavy a burden on the heart. Medical efforts are now directed toward keeping tuberculous patients at the weight that best fits their physique and constitution.

Nutritional advice for the arthritic patient was often as illogical as it was variable. Some physicians have forbidden tomatoes and fruits because of their acid content; others pointed the finger of scorn at meat under the mistaken idea that it increases the production of uric acid. Because the blood of patients who have arthritis shows a lowered sugar tolerance, a group of doctors have advocated a strict limitation of foods containing starches and sugar. It must be remembered that not all those having the same disease should follow the same diet.

THERE are fat arthritic patients and lean arthritic patients just as there are ulcer patients with the two extremes of bowel activity. Patients who are afflicted with the same disease have to be individualized just as carefully as those persons, for instance, who have headaches or are losing weight. Fat arthritic patients should therefore have the amount of starches and sugar reduced so as to lower their weight. As the body chemistry improves with the return of weight to normalcy, the arthritis frequently follows suit. Patients with arthritis should guard against faddish or one-sided diets. They should be guided by those dietary principles which best fit their composite requirements and which build up their general vitality, according to the advice of a physician. It is discouraging, to be sure, to emphasize the fact that those with arthritis have a condition which often drags on for months and sometimes for years. This very fact makes it all the more imperative for patients to keep to the well tried paths of nutrition rather than to explore the by-paths of "compatible eating" and other dietary will-o'-the-wisps.

The changed conception of the treatment of diabetes has been so recent that many young hospital interns of today have had some part in compiling statistics on the subject. Only a short time ago it was thought that the only problem in this disease was concerned with the body's inability to utilize starches and sugars. In consequence of this appraisal the chief treatment was to limit carbohydrates in the diet. When insulin was discovered this narrow interpretation of diabetes took a jolt. The sum total of the organs, glands and tissues of the body and not merely one organ, gland or tissue now had to be considered when prescribing diets. Instead of having carbohydrates eliminated from the diet the patient is now fed both starches and sugar, with or without insulin medication, according to the individual requirements.

Many present-day grandmothers are probably startled when they see their 3 month old grandchild being fed carrots, tomato juice, scraped beef and minced liver. Infant feeding in the past score of years has changed about as radically as the feeding of adult invalids. Formerly every baby doctor had his favorite and complicated system of milk modifications so that if a worrying mother changed doctors she would have to take another course in higher mathematics, so complicated were the computations of these milk formulas.

IN VIEW of the changed attitude of the medical profession toward the specific treatment of disease by diet, I do not wish to give the impression that the healing profession is haphazardly drifting from one opinion to another. The airplane was made possible by the discovery of electricity, gasoline and the internal combustion engine. So, step by step, progress is being made in the science of nutrition. One discovery leads to another. By coordinating new knowledge here with scientific testing there, we find new facts that help remove another thorn from mankind's flesh.

POCKET CALORIE INDEX

To Aid in Gaining or Losing Weight

Compiled by

ESTHER BOGEN TIETZ

DAILY CALORIE COUNT

(1) ASK YOUR DOCTOR HOW MANY CALORIES YOU NEED DAILY.

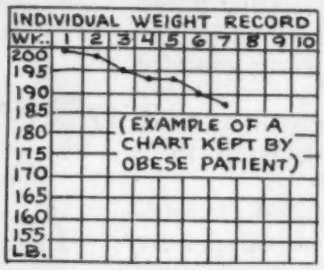
CALORIES ORDERED DAILY

(2) EACH MORNING SET TOP OF INDICATOR BELOW REQUIRED CALORIES. MOVE INDICATOR UP ONE SPACE FOR EVERY 100 CALORIES EATEN.

(3) RECORD WEEKLY WEIGHT.

CALORIES
100
200
300
400
500
600
700
800
900
1,000
1,100
1,200
1,300
1,400
1,500
1,600
1,700
1,800
1,900
2,000
2,100
2,200
2,300
2,400
2,500
2,600
2,700
2,800
2,900
3,000
3,100
3,200
3,300
3,400
3,500
3,600
3,700
3,800
3,900
4,000
4,100
4,200
4,300
4,400
4,500

INDIVIDUAL WEIGHT RECORD



(EXAMPLE OF A CHART KEPT BY OBESE PATIENT)

IF UNDERWEIGHT, BEGIN RECORD ON BOTTOM LINE.

IF OVERWEIGHT, BEGIN RECORD ON TOP LINE.

IT IS SAFEST TO BE 10 LBS. OVERWEIGHT IF UNDER 35 YRS. OLD. AFTER THAT EVERY EXTRA POUND IS DANGEROUS.

HEIGHT-WEIGHT TABLES

WOMEN

HEIGHT	4'8"	4'10"	5'	5'2"	5'4"	5'6"	5'8"	5'10"	6'
AGE 15	101	105	107	112	118	126	134	142	152
20	106	110	114	119	125	132	140	147	156
25	109	113	117	121	128	135	143	151	158
30	112	116	120	124	131	138	146	154	161
35	115	119	123	127	133	142	150	157	163
40	119	123	127	132	133	146	154	161	167
45	122	126	130	135	138	149	157	164	171
50	125	129	133	138	144	152	161	169	176
55	125	129	133	138	144	153	163	171	177

MEN

HEIGHT	5'	5'2"	5'4"	5'6"	5'8"	5'10"	6'	6'2"	6'4"
AGE 15	107	112	118	126	134	142	152	162	172
20	117	122	128	136	144	152	161	171	181
25	122	126	133	136	149	157	167	179	189
30	126	130	136	141	152	161	172	184	196
35	128	132	138	144	155	165	176	189	201
40	131	135	138	146	158	168	180	193	206
45	133	137	141	149	160	170	182	195	209
50	134	138	143	151	161	171	183	197	211
55	135	139	144	154	163	173	184	198	212

THE WEIGHT IS AN INDEX OF HEALTH

TO KEEP WELL EVERY ADULT MUST EAT –

ONE CUP MILK + ONE PORTION MEAT + ONE EGG + TWO VEGETABLES + TWO FRUITS

TO PROVIDE MINIMUM DAILY SALT, PROTEIN, VITAMIN AND BULK.

IN ADDITION DRINK SIX GLASSES WATER

ADD ENOUGH CALORIES TO PROVIDE FUEL

DAILY { TO REDUCE EAT 1,200-2,000 CALORIES / TO GAIN EAT 2,800-3,500 CALORIES

EACH BLOCK EQUALS 100 CALORIES

PROTEIN FOODS

SELECT ONE OR MORE FOR EACH MEAL

ONE INCH CUBE CHEESE	½ CUP COTTAGE CHEESE	1 ⅓ EGG	⅝ CUP MILK
SMALL PORTION MEAT	MEDIUM PORTION FISH	⅓ CUP CANNED SALMON	15 OR 7/8 CUP OYSTERS
¼ CUP CREAMED FISH OR MEAT	½ CUP CHEESE SOUFFLÉ	¼ CUP MACARONI AND CHEESE	TWO SLICES BACON

CONCENTRATED FOODS

TO GAIN WEIGHT CHOOSE THESE

ONE MEDIUM SLICE BREAD	TWO BISCUITS	FOUR CRACKERS	ONE PANCAKE
ONE TABLESPOON OIL OR BUTTER	THREE TABLESPOONS CREAM	ONE TABLESPOON MAYONNAISE	ONE TABLESPOON PEANUT BUTTER
¼ CUP BEAN SOUP	½ CUP CREAM SOUP	½ CUP BAKED BEANS	½ CUP CEREAL (COOKED)
ONE IRISH MEDIUM POTATO	ONE SWEET MEDIUM POTATO	ONE MEDIUM BEET	TWENTY UNSHELLED PEANUTS
FOUR DATES	FIVE PRUNES	FOUR SMALL WALNUTS	ONE LARGE BANANA
½ CUP COCOA	½ CUP GRAPE JUICE	ONE CUP ORANGE JUICE	½ CUP MILK DESSERT
ONE INCH PIECE PIE	SMALL PIECE RICH CAKE	THREE SMALL CHOCOLATE BON BONS	TWO TABLESPOONS SUGAR

BULKY FOODS

TO LOSE WEIGHT CHOOSE THESE

FOUR PORTIONS CAULIFLOWER	TWO CARROTS	THREE PORTIONS STRING BEANS	TWO HEADS CELERY
ONE CUP GREEN PEAS	FOUR PORTIONS SPINACH	TWO EARS CORN	ONE LARGE CUCUMBER
FIFTY STALKS ASPARAGUS	FOUR FRESH TOMATOES	1 ¾ CUPS CANNED TOMATOES	FOUR PORTIONS CABBAGE
ONE HALF GRAPEFRUIT	1 ½ HEADS LETTUCE	THREE PORTIONS KALE	ONE LARGE MELON
ONE LARGE ORANGE	ONE LARGE APPLE	ONE LARGE PEAR	1 ½ CUPS STRAWBERRIES
ONE SLICE CANNED PINEAPPLE	ONE CUP FRESH PINEAPPLE	FIFTY GRAPES	¾ CUP GELATIN
1 1/8 CUPS SKIMMED MILK	ONE LARGE BEER	MINERAL OIL IS NOT ABSORBED - USE IN SALAD DRESSING. UNSWEETENED TEA AND COFFEE - NO FOOD VALUE	

THE RIDDLE OF THE BLOOD

Chapter VIII of
The Doctor's Scotland Yard

By ROBERT A. KILDUFFE

"WELL, I SEE you finally got your name in the papers, Doctor," said Inspector Carey as he came in, smiling genially and flourishing a folded newspaper.

"I knew you'd see that," Trebor smiled back at him. "Stuff like that is duck soup to a reporter looking for a good lead."

"What's all this about?" I demanded. "Holding out on me, are you?" I had the paper by this time, having taken it from Carey who was already settled in his accustomed corner. The Inspector had folded it so that the headline was staring me in the face: "Expert's Testimony Frees Defendant in Paternity Case," it ran.

In terse, laconic style the story told that a young man, accused of being the father of an illegitimate child, a responsibility which he denied, had been freed by Trebor's testimony to the effect that blood tests had furnished evidence that this could not be the case.

"Too bad you didn't have a picture to go with this," I said with a grin, knowing Trebor's dislike of newspaper publicity.

"You're in for it now, Doctor," chuckled Carey.

Trebor, who had been studiously engaged in filling his pipe, looked up at us with a grin.

"Jealousy!" he said with an airy wave of his hand. "Just jealousy, that's what it is. I'm not surprised at you, Gavin—but you, Carey! This must be one of those rare evenings when the paper doesn't mention something about your having the situation well in hand and 'expecting to make an arrest within twenty-four hours.' Ah, well! Fame has at last sought out the old scientist in his dingy attic!"

"Too bad fame didn't have a couple of glasses in its—or is it her—hand," Carey hinted.

"One of the things I'd like to find out some time," I grumbled jokingly, "is why I'm supposed to do all the work around here."

"Perhaps it's because you never, by any chance, complain about it," Trebor suggested sweetly.

"All he needs is a delicate hint," Carey added, laughing. "What I want to know, though, is about these blood tests. I knew that you fellows could do a lot with blood, but I didn't know that determining parentage was one of them. If you had something else on tap for tonight, how about postponing it and giving us the lowdown on this stuff?"

THE HEADLINE WAS STARING ME IN THE FACE: "EXPERT'S

"Whatever you fellows say," Trebor agreed. "Suit you, Gavin?"

"Sure!" I answered, distributing the glasses. "Here's how!"

"Now that transfusion of blood is done so frequently," began Trebor, "and I sometimes think that about the only thing it has not been used for is a cold in the head—but let that go—now that it is done so commonly, I suppose every one knows that human blood varies in its properties. In other words, you just can't mix any two bloods together."

"I found that out," interrupted Carey. "I was turned down once. They told me my blood wouldn't do. I thought maybe there was something wrong with it until I asked one of the medical examiners and he told me that there was nothing the matter with my blood; it just wouldn't mix with the other fellow's."

"Exactly!" said Trebor. "Your blood was incompatible with that of the patient, and if they

RELATION

TESTIMONY FREES DEFENDANT IN PATERNITY CASE," IT RAN.

had used it they would have done him more harm than good. The explanation is rather interesting as well as a little involved. I'll try to simplify it as much as I can. I hope I succeed."

"Do you fellows know that the idea of transferring healthy blood to a sick person isn't new? As an idea, it existed long ago in various forms. In fact there was one old tyrant in bygone days who believed that by drinking the blood of youthful slaves and captives he could keep himself young, if not make himself immortal. Unfortunately, so to speak, he was assassinated before he could prove the truth of the theory."

"That *was* too bad," said Carey ironically.

"Of course, that wasn't a transfusion," Trebor went on, "because transfusion means the transfer of blood from the vessels of the donor to those of the recipient. Most people, I suppose, think that this is a strictly modern invention, and yet the underlying principle of the method first used was described as long ago as 1615. I think I can give it to you."

After a short search among the books on the shelf he came back to his chair.

"Here," he said, "is a translation from the Latin of a thesis by Libavius, a physician of the sixteenth century. He says: 'Let there be present a robust healthy youth full of lively blood. Let there come one exhausted in strength, weak, enervated, scarcely breathing. Let the master of the art have little tubes that can be adapted one to the other; let him then open an artery of the healthy one, insert the tube and secure it. Next let him incise the artery of the patient and put into it the feminine tube. Now let him adapt the two tubes to each other and the arterial blood of the healthy one, warm and full of spirit, will leap into the sick one and immediately will bring him to the fountain of life, and will drive away all languor.'

"Of course, we have no sure knowledge that Libavius ever did that, and it seems rather more probable that that was simply his idea of how it *could* be done. As a matter of fact, he was quite right, for the method used for early transfusions was similar in many respects."

"Some of those old duffers must have been pretty smart," I said.

"They were, indeed," agreed Trebor, "and more than one of them was ages ahead of his time."

"Who actually did this thing first instead of just talking about it?" Carey asked.

"You'd be surprised," smiled Trebor. "The first reference to the transfusion of blood into a human being occurs in the diary of Samuel Pepys. Sir Christopher Wren, an astronomer of the time, had successfully transfused blood into dogs in 1659. Pepys writes that 'this did give occasion to many pretty wishes, as that the blood of a Quaker be let into an Archbishop and such like; but may, if it takes, be of mighty use to man's health for the amending of bad blood by borrowing from a better body.'

"On Nov. 23, 1667, Pepys records that the experiment was performed on 'a poor and debauched man that the College had hired for twenty shillings to have some of the blood of a sheep let into his body. Some think that it may have a good effect on him as a frantic man [that is, a half mad individual] by cooling his blood.' The man himself afterward claimed that he felt like a new man, but Pepys notes that he continued 'a little cracked in the head.'

"The first actual transfusion from man to man seems to have been done by Jean Denys, physician to Louis XIV. He did three transfusions at about this period, but when the third patient died the practice was forbidden by royal edict. However, in 1824, transfusion again came into prominence when James Blundell of Guy's and St. Thomas' hospitals in London reported quite a series of cases. But it wasn't until the World War that transfusion as a means of combating the effects of hemorrhage became a common

"WE'LL ALSO SUPPOSE THAT THE SUSPECT FIRST SAID THE SPOTS WERE NOT BLOOD. THEN, LATER ON, HE SAID THEY MIGHT BE BLOOD, BUT IF THEY WERE HE GOT THEM ON THE SHIRT WHILE HE WAS HAVING A NOSEBLEED."

procedure and the means for effecting it became simplified and generally feasible."

"I knew that blood transfusion was used a lot during the War," said Carey, "but blamed if I knew it had been done much before that."

"Well, it was. The main reason that it did not become popular was because about half the patients died. They used to think that the deaths were due to some accident. So they were, but nobody knew what sort of an accident until as late as 1900. Landsteiner, an Austrian, then made the observation that when the blood cells and serum of normal human beings were mixed the serum of one person frequently caused the red blood cells of another person to adhere in clumps. That phenomenon is called agglutination and led to the discovery of what are now known as blood groups or types."

"So that's what they mean by typing a donor," I said.

"Exactly! Before a donor can be used with certainty that his blood will not cause any reaction in the patient who receives it, the physician has to know what type the donor's blood is and whether or not that type will actually mix safely with blood of the patient's type."

"Is there any relation between the type of blood and the type of person?" I asked. "That is, suppose the fellow who received the blood was a very fine sort of chap and all that sort of thing, and the fellow who gave it to him was a tough egg. Would there be any difference in the patient as a result?"

"So that's the way thrillers are born, is it?" laughed Trebor. "Unfortunately, for you, the answer is 'no.' The patient would still be what he was before, and the donor would remain as tough as ever. It's too bad, Gavin, but it won't work."

"That is too bad," I agreed laughingly. "But how about races? Can you tell by typing whether the blood came from a Chinaman, say?"

"I hate to disappoint you, but that can't be done either. The only relation that blood types have to races is that their distribution has given us some very suggestive evidence as to the origin of various races. But that is much too deep and much too involved for us to start in on. Just to clear everything up," he added, "the blood types, once established, are permanent. Nothing can change them."

"Now let me ask one," said Carey. "Suppose you gave somebody the wrong type of blood. Just what would happen?"

"Probably the first effect would be a severe chill," replied Trebor. "Or perhaps the patient might complain of feeling faint or queer. The chill would not be long in coming, though, and then there would be a fever which gets quite high sometimes. Often the patient would become jaundiced, that is, he would turn yellow."

"Just from the presence of the wrong kind of blood?" asked Carey with some surprise.

"That's enough. You see, if the patient's red blood cells were clumped or agglutinated by the serum of the donor's blood, or if the donor's cells were agglutinated by the patient's serum, the resulting disturbance would be sufficient to account for the chills and fever. The jaundice arises from the fact that, in addition to causing agglutination of the cells, an incompatible blood frequently dissolves the red cells. Red cells that don't match actually destroy each other. As the mechanism of red cell formation is closely associated with bile formation and with the functions of the liver, the jaundice is a very natural result."

"I was typed once," said Carey. "I'm a type I."

"Do you know which classification was used?" Trebor asked.

"I don't even know what you mean."

"Well, there are four blood types. Unfortunately, that fact was discovered independently about the same time by two workers, Moss, an American, and Jansky who was, I think, working in Germany.

"They both found that there were four types, but the one Jansky called type IV, Moss called type I, so that it is very important to know, whenever a typing is recorded of either of these groups, which classification is being used.

"You belong to a relatively infrequent type, Carey. Only about 10 per cent of human beings belong in group I, and about 7 per cent in group III; while about 40 per cent are classed in group II and 43 per cent in group IV. So, you see, it is essential to know the blood types of both donor and patient before a transfusion is made. The blood of the donor should first of all be of the same type as that of the patient. It must also be known as a fact that the two bloods will mix. So both are typed, and a compatibility test is made. It's much simpler than it sounds. It's all done on glass slides with just a few drops of blood."

"If it's all so simple," I said, "where does all this experting of yours come in? Not that I can see what all this has to do with the newspaper baby, anyhow."

"Anything's simple—when you know how," smiled Trebor. "As for the experting, as you call it, that's something else again. It took a lot of work by a lot of people to discover that, first of all, the blood types exist from birth, and secondly, that like many other individual differences, they follow the laws of heredity.

"As a result of these discoveries, which resulted from the study of many thousands of families through several generations, it follows that, if the blood type of the mother and father is known, the type into which the child must fall can be told with a definite degree of certainty, subject, of course, to certain limitations. To put it simply, if both parents were type I the child would naturally have to be type I also. If it turned out that the child was type III it would naturally follow that the supposed father was not the father as a matter of fact."

"That's fair enough," said Carey. "Simple enough, too, when you look at it."

"It's simple enough in that particular instance, but actually it is a little more complicated than that. In the newspaper case you could say that the supposed father was not guilty. But suppose the child turned out to be type I? You couldn't say that the supposed father *was* the father because, you see, a lot of other men are type I also.

"So the procedure has rather definite limitations. You can prove that a man could not have been the father of a certain child, but you cannot prove that he was. You can only say he might be. In other words, you can exonerate an individual with this method, but you can't convict him."

"Well, if this has been going on for such a long time I don't see why they make such a fuss about it in the paper," I said. "You must have a good press agent, Trebor."

"Looking for a job?" he grinned. "These studies have been going on for a long time, but it is only recently that this paternity test has become a matter of record legally, so it makes a good headline. The law, you know—of course, I wouldn't want the Inspector to hear this—is reputed to move rather slowly. Remember Mr. Bumble's famous remark, 'The law is a ass!'"

"Don't mind me," laughed Carey. "If this guy Bumble has any doubts I could tell him a lot of things that would show he was pretty near right, sometimes."

"This paternity business is still pretty complicated," Trebor continued. "A definite conclusion is possible only in about one sixth of the cases, although some recent work will increase this proportion. As I just told you, there have been a large number of cases in which blood typing was the only means of indicating the possible paternity of the accused man. But as long as he was only one of a number of people falling within a certain blood group, nothing could be said definitely about it unless, of course, it could be proved absolutely that none of the others had ever seen the mother.

"In 1927, Landsteiner and Levine, working in the Rockefeller Institute, discovered two additional agglutinogens in human blood, which they called M and N. These are separate and distinct from the agglutinogens that determine blood types. This discovery makes possible another separation of all human bloods into three groups: type M, which includes about 30 per cent of the population, type N, which accounts for about 20 per cent, and type MN, which contains both agglutinogens and makes up the remaining 50 per cent of the population.

"Now these M and N agglutinogens also follow the laws of heredity. Suppose, now, that the problem is to determine which of two men, both type I, is the father of a type I child. If it can be shown that the child's blood contains M agglutinogen and that one of the men is in the M group while the other is not, you have definite evidence as to the paternity."

"The paper was right!" said Carey with some emphasis. "This is sure a job for an expert! I can get the general idea, but the details—!"

"You and me both!" I agreed with more vigor than elegance. "This calls for another dose of the same, don't you think, Carey?"

"Well, of course, if you're going to insist," he grinned. "You know," he continued, "the next time I send some blood spots over to our laboratory I think I'll send a bouquet along with them. I didn't know those birds had to know such a lot of stuff."

"There's something I'm not always altogether clear about," I added as I distributed the newly charged glasses. "Can you give us a line on that—you know, make it simple? For instance, suppose Carey brought you a shirt with something

on it supposed to be blood spots. Just how would you go about proving that they were, or that they belonged to the body, or to the fellow Carey had pinched?"

Trebor lifted his glass to us with a flourish. "You fellows are certainly hounds for punishment," he smiled. "Let's make up one you can use in your next thriller. Suppose Carey brings in a shirt. It has some spots on it. Carey says that these are blood and that they spurted on the shirt while the owner was busily engaged in furnishing Carey with a corpse to work on. We'll also suppose that the suspect first said the spots were not blood. Then, later on, he said they might be blood, but if they were he got them on the shirt while he was having a nosebleed. How's that?"

"It's perfect," said Carey, "but it isn't new. We've had just that sort of story. Now it's your funeral. Just what do you do and where do you start?"

"First of all," replied Trebor, "we'd cut out one of the spots and soak it in salt water containing just a little glycerin. We'd use what we call normal salt solution; that is, a solution of salt in water about the same concentration as occurs in the blood itself, about 0.85 per cent. After it had soaked sufficiently, we'd take a pair of fine needles and tease the fabric apart. This would liberate the red blood cells if they were not too disintegrated.

"Then we'd put a drop of this solution, in which the red cells were floating around, on a glass slide and examine it under the microscope. By the appearance of the cells and their size, which we'd learn by actual measurement, we'd know whether or not they were human blood cells. Now if we could get some blood from the body we'd type both specimens; and if both were the same type we could only say that the blood on the shirt *might* be that of the victim, but we couldn't say that it was. On the other hand, if the corpse was a type II and the suspect a type I and the blood on the shirt was also type II, then it certainly would look bad for the suspect. For it would hardly be probable that any of the other persons who were also type II were likely to have been bleeding on his shirt."

"That sounds sort of easy to me," I said. "Now I'll give you one. In the first place, this fellow Carey has grabbed is a mechanic. He says that these spots are probably not blood at all but grease and dirt or what have you. In the second place, he says that he also keeps chickens, and if the spots are blood then they got on his shirt when he was killing a chicken for Sunday dinner. And, in the third place—just to show you what a good fellow I am—the whole thing happened some time ago and you haven't any specimens from the body."

"Sure there's nothing else you can add?" grinned Trebor.

"Suppose we wash the shirt, just for good measure," added Carey. "We've had that happen, too."

"Then you know the laboratory isn't sunk," Trebor replied. "If you've had that happen you know they were still able to prove something, Carey."

"I know they did," Carey agreed, "but I don't know how they did it."

"First of all," Trebor began, "we would endeavor to decide whether or not the stains were blood. That's always the first step. There are various chemical and other reactions which can be used for that purpose. In this case we'd soak the stains as usual, but we probably wouldn't find any cells. So we'd take some of the extract we had made from the stain and use it for chemical tests. There's one called Teichman's test, for example, in which the extract of the stain is carefully heated with salt and acetic acid, forming characteristic crystals. These are called hematin crystals because they are derived from hemoglobin, the substance occurring inside red blood cells; and when such crystals are found under the microscope they constitute reliable evidence that blood is present. This, and other chemical reactions which can be used, will respond even when the stains have been washed.

"Then, too, we could also examine some of the solution with an instrument known as a spectroscope in which hemoglobin gives a characteristic spectrum. Of course, you know what a spectrum is," he added with a sly smile.

"Why, certainly!" I said emphatically. "But you might as well explain it for Carey's benefit."

"I could do without knowing," grinned Carey, "but perhaps you might go through with it so Gavin can stop you if you make any mistakes."

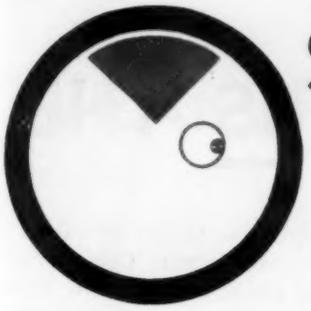
"Well," continued Trebor with a laugh, "if you pass light through a glass prism it will be decomposed into various colored bands. Remember what used to happen to those dangling glass things on old-fashioned chandeliers? That gives you the idea. Now if you interpose a fluid containing some substance in solution between the light and the prism, you get different colored bands, and the difference in their width and color and so on enables you to identify the substances in the solution. So there you are."

"That's right!" I said brightly.

"Sez you!" grunted Carey. "What happens then, Doctor?"

"So far, all that these methods prove is that the stains were blood stains. We have no evidence at all that they were human blood or any other particular kind of blood. That's the problem, but at least we can get the evidence."

"That's what I want to get at," said Carey, who was naturally much interested for he had often been confronted by just such problems as this in his own cases. *(Continued on page 28)*

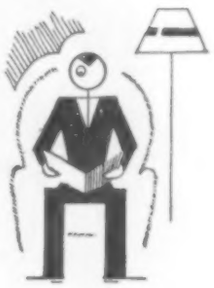


SWALD

By Dean Collins

Oswald went in for much physical culture;
Oswald went in for each dieting fad;
Oswald was breathing and writhing and wreathing
And using suggestions when still a mere lad.
Oswald was off the whole medical science;
Oswald held germs and the like in defiance:
"For any old germ in this system of mine
Will flee when I get a smart poke in the spine!"

Oswald his mind had imbued, by much reading,
With great self reliance in matters of health;
And any disease in his system a-breeding
Must do all its dirty work wholly by stealth.
Oswald his reason had wholly persuaded
That he could take care of such matters unaided;
But later he learned, to his great consternation
His appendix was shy on all this information.



So Oswald rode up to the hospital room,
Vaulted and domed like the halls of the Caesars;
And there while he slept 'neath the ether's perfume,
The doctor removed his appendix with tweezers;
And Oswald, recovering, said: "It is plain
That physical culture has not been in vain,
For due to my physical regimentation
I've lived through the peril of this operation!"

Oswald went home and no longer was ill
And turned once again to his diet and such;
And then when the doctor presented his bill,
Our Oswald exclaimed: "It is far, far too much!
Besides I feel most of my rejuvenation
And all my survival of your operation
Was due to the fact that I laid in a wealth
Of strength through my rational study of health!"

Oswald continued: "Your bill I have laid
Aside for the present; a bill has preceded
For thaumatelectrical treatment, which paid,
I'll try to do something on yours if it's needed.
And yet, I protest, it is almost a crime
To charge, when I might have recovered in time
With suitable diet. Must I pay for the treason
Of appendix that simply won't listen to reason?"

SCHOOL OF NURSING
READING ROOM

WHICH IS THE

MOST READERS will not need to go beyond the title of this paper because they "know" that the female is the weaker sex. They know this because it is common hearsay. This is not a new idea of this or of the preceding generation, for it was expressed by the apostle in the Bible who said, "giving honour unto the wife as unto the weaker vessel" (1 Peter, 3: 7).

Before going further it is necessary to define the terms "inferiority" and "superiority" as they are used in this discussion. Certainly they do not refer to physical accomplishment, since in almost all fields of athletic endeavor the male is superior to the female. Part of this situation is due to training and part to the arrangement of muscles and bones. So in this discussion the terms "inferiority" and "superiority" refer to resistance to serious disease and to length of life. The term "serious disease" should be emphasized. Although women are sick more often than men their illnesses are less important from the standpoint of endangering life. With this definition of the problem let us examine the evidence for the relative superiority of either sex.

Recently I reported a study of the distribution by sex of approximately 300,000 cases of disease observed at the Mayo Clinic together with other cases reported in various medical articles. The cases were of diseases involving many bodily structures, the single requirement being that the structures involved must have the same function in the male and in the female. Following this requirement, cancer of the breast, as an example, was excluded from the study because the breasts of women have different purposes and functions from those of men.

Without being too specific, I can say that serious diseases involving the organs of digestion affect men much more frequently than they involve the same organs of women. Ulcers and cancers of the stomach, cancers of the lip, mouth, tonsils and intestine and hardening of the liver affect men more frequently than women. The single exception in this group is disease of the gallbladder, including inflammation, gallstones and cancer, all of which affect women and girls predominantly. No logical explanation exists for this peculiar situation. Many physicians have attributed it to pregnancy and obesity. When one studies the records, however, one finds that women who have never been overweight or pregnant are afflicted with disease of the gallbladder more often than are men and that the ratio of the incidence of disease of the gallbladder among girls as compared to that among boys is about the same as that for the incidence of the disease among women as compared to that among men. For the time being we must content ourselves with the statement that disease of the gallbladder affects females predominantly. Cancer of the air passages, pneumonia and asthma affect men more frequently, as do inflammation and hardening of the arteries of the legs and heart.

WHEN the newspapers report a sudden death from heart disease the deceased usually is a man. Men are the victims of gout, of cancer, inflammation and stones of the kidney and urinary bladder, and of cancer and inflammation of the bones more frequently than women are. Likewise, more men than women have serious diseases of the spinal cord and of the brain. If the foregoing observations are true, men should die at an earlier age than women because often the serious diseases mentioned cause death. Actually, this is true. In 1927, at the age of 10 years the average expectancy of life for males was almost four years less than for females. It is a common observation that in almost every community there are more widows than widowers. This is explained in part by the fact that widowers are more likely to remarry and that men ordinarily marry younger women, and it is explained in part by the average earlier death of men. Census figures reveal that there is a gradually diminishing predominance of males in the population of the United States

WEAKER SEX?

after the age of 55 years has been attained. At the age of 75 years, females outnumber males, and there are almost twice as many centenarian women as men. It is interesting to notice in this connection that there are alive today six wives of ex-presidents and only one ex-president.

Shortly after my study was published a student of animal heredity wrote that when careful records are kept it is found that males of the animal kingdom live a shorter period than the females. The males of fish constitute a gradually diminishing proportion of the population as they increase in age, because the females live longer. If swordtail minnows of equal ages are exposed to deleterious solutions, such as alcohol, the males invariably succumb first. One of the most humorous observations is that regarding Copepoda, a large order of minute crustaceans. The males are dwarfs which attach themselves to females of their own age and litter and cling there all their lives; as the females advance in age the percentage of clinging dwarf males gradually diminishes because of their death. In the terms of a current colloquialism, they "can't take it."

THE evidence regarding the relative superiority of males and females is much more extensive than appears from this brief presentation. One fact is unmistakably clear: The male is inferior to the female, and, speaking comparatively, the price of maleness is weakness. I can sense a rising chorus of denial of this statement, particularly from the men, but the data speak for themselves. Lest the subject become controversial to a point where it escapes its boundaries it is necessary to reemphasize that the terms "inferiority" and "superiority" as used in this paper refer to ability to withstand serious diseases.

It would not be fair to men to omit the statement that the study shows that women are more prone to have nervous disturbances, such as sick headache, hysteria and neurasthenia. These may be signs of inferiority but not as the term was originally defined. An interesting sidelight on the incidence of nervous disturbances is furnished by the observation that four men commit suicide for each woman who does so, although more attempts at suicide are made by women. The Germans express this situation by "nicht ernst gemeint," meaning that women do not attempt suicide seriously.

Most persons, confronted with the evidence of the relative inferiority of males, would say in explanation that men work harder, smoke more, drink more alcohol and live more irregularly as regards food and rest. These are not the explanations for the comparative brevity of life of the male.

More male infants and children die than female infants and children. As every one who has children knows, the habits of male and female infants and children are about the same; yet as an example of the inferiority of the male sex, 129 male infants less than 1 year old died in the United States registration area in 1920 for each 100 female infants. In addition, males are much more apt to be born dead than females, and those born alive have a much higher incidence of deformities. The weakness of the human male is inherent or inherited and does not result either from environment or from habits.

THE situation can be expressed in somewhat more technical language as follows: "The causes of the greater differences in male and female mortality in early infancy are internal and constitutional, and not external or adventitious. There can hardly be any other explanation than that the male is handicapped by a lessened degree of vitality that is directly or indirectly the result of a peculiar complex of hereditary factors."

By EDGAR V. ALLEN

Health Gadgets for the Gullible

By
RICHARD KOVÁCS

FROM THE DAYS WHEN THE GREEK SLAVE WAS SUBJECTED TO THE SHOCKS OF THE ELECTRIC FISH, TO CURE HIM OF HIS GOUT, FROM TIME TO TIME MANKIND HAS BEEN OFFERED IN ELECTRICITY A PANACEA FOR HUMAN ILLS.

FROM the days when the Greek slave of Anthero was subjected to the shocks of the torpedo, or electric fish, to cure him of his gout, and the Grecian women and children wore amber beads in the belief that the mysterious soul of amber would exert a healing influence over their diseases, mankind has been offered from time to time in electricity a panacea for human ills. In spite of progress in the understanding of the nature of electricity and its widespread employment in daily life and in the art of healing, the inherent awe of its mysterious power still holds many persons spellbound. The only difference is that the electric contraptions of the early days have been cunningly developed into elaborate glittering and sputtering devices of modern times.

There are amusing accounts of humbugs perpetrated by electricity from the very beginning of its use.

It was in 1780 that the immortal Galvani, professor at the University of Bologna, discovered through experiments with frogs' legs the electrical current generated by two dissimilar metals contacted through an acid. Five years later, in 1785, one Dr. Graham advertised in the London *Morning Chronicle* his Temple of Health and Happiness, in which there was a "celestial bed" through which electrical currents were passed. For a fee of £50 the cure of sterility was promised to any couple after sleeping in the bed.

The doubtful honor of having "invented" and successfully exploited the first quack electrical appliance on a large scale belongs to an American, Elisha Perkins, originally a student at Yale, and a medical practitioner in Plainfield, Conn. About 1796 he conceived the idea that metals when applied externally to the body "would draw disease from it." According to his own account one rod was composed of copper, zinc and gold while the other was of iron mixed with silver and platinum. They were probably made of iron and brass, rounded at one end and pointed on the other. The United States Patent Office granted a patent on this humbug. Perkins claimed that by the use of his "tractors" the body could be freed from disease without any other treatment. When the tractors were applied it was necessary that they should always be drawn downward and that in obstinate cases friction should be used until the skin flushed red. In 1797 the Connecticut Medical Society expelled Perkins from membership for "practicing delusive quackery." Perkins left Connecticut for Philadelphia, where he was received with enthusiasm at the various hospitals and infirmaries he visited to demonstrate his appliance. The members of the Congress then in session were greatly impressed by his story, and George Washington himself purchased a pair of the tractors for his family. Perkins patented the tractors, and they had a large sale throughout the United States. They

cost him about sixpence, but he managed to sell them at five guineas a pair.

Setting the example for overseas extension of many other electric fakes to follow, Perkins sent his son, Benjamin Douglas, to England to introduce them to the Britishers. Benjamin succeeded in doing so, and within a short time hundreds of clergymen, including the chaplain to the Prince of Wales, Lord Henniker, and other influential personages, testified to their wonderful power. A "Perkins Institute and Dispensary" was established for the poor, with Lord Rivers as president, and the Royal Society accepted a pair of the famous appliances and a copy of Perkins' book.

Caricaturists seized on the prevailing craze of using the tractors for all kinds of ailments, and poets and ballad singers sang their praises. A popular song proclaimed them:

> Arm'd with twin skewers see Perkins by main force
> Drag the foul fiend from Christian and from horse.

Even the great poet Byron immortalized them in the following lines:

> What varied wonders tempt us as they pass!
> The Cow-pox, Tractors, Galvanism, Gas,
> In turns appear to make the vulgar stare,
> Till the swoll'n bubble bursts—and all is air.

THE fraud of Perkins' contraption was finally exposed by a medical practitioner of Bath, Dr. John Haygarth. He shaped a pair of tractors out of two pieces of wood and painted them to appear like the metal appliances. With these he produced even greater cures than the originals; then, together with a medical friend, he sent these wooden imitations to other physicians, and they forthwith reported astonishing results. The bubble of the tractors was thus burst. The junior Perkins packed up his trunks and returned to the United States, but the rich harvest of some $50,000 which he had reaped in London went along with him.

The success of the Perkins humbuggery has been duplicated over and over again in the succeeding years. No quack of assertive personality and a fine sounding line of argument ever has any difficulty in securing testimonials from apparently sincere persons. Chronic sufferers or persons with a largely imaginary ailment experience temporary relief after almost any strongly suggestive line of treatment, and they will be willing to testify to its virtues while the spell lasts. Unfortunately, many of the enthusiastic testimonial writers pass out of existence before long; but their testimony lives on and is employed to dupe others while traffic will bear it.

"Electrical rings" and "magnetic belts" for the alleged cure of almost all human ailments and especially for that inexhaustible source of quack revenues, male and female "weakness," led the parade of fake devices in the early part of this century. There was the Addison Galvanic Electric Belt, a most gorgeous affair. Vivid red and yellow cotton strips, crudely put together, enveloped small pieces of copper and zinc which were separated by blotting paper; this, of course, was to generate a simple electrical current. The advertisements usually read, "All the balms, oils and minerals in existence are contained in electricity and in their most skilfully combined proportions. . . . If you are weak you need electricity. For lost womanhood or manhood there is nothing like electricity to restore your health. To the ladies we will say, if you have female pains there is nothing better than an electric belt. . . . Electricity is the greatest power on earth. It puts life and force into whatever it touches; gives relief to rheumatism, backache, kidney, liver and bladder troubles, early decay, night losses, lack of nerve and vigor, nervous debility, constipation, dyspepsia, undevelopment and lost vitality and all female complications."

MEDICINE showmen, agents, palmists and hustlers were engaged in selling this electric marvel to that class of the community to which the late Mr. Barnum has so often feelingly referred. The belt sold for $2.50, cost less than 10 cents and was worth nothing, of course.

Then there was the Electro-Chemical Ring, made of ordinary iron, which was claimed to "Cure Diseases Caused by Acid in the Blood," such as kidney disease, diabetes, cancer, epilepsy, goiter and some fifteen other ailments. The ring cost less than 1 cent and sold for $2. Its inventor had an income of $45,000 in one year and would have continued his swindle if the federal authorities had not issued a fraud order against the business, in spite of some of the testimonials which, of course, he also produced in goodly numbers.

"Gas-pipe cures" furnished a fake device along the lines of Perkins' tractors. A piece of nickel plated gas-pipe closed at two ends was filled with sand, sulphur and carcoal. To the end of the piping were attached wires which ended in small disks with elastic bands and buckles so they could be fastened to the wrists and ankles. It was claimed that the pipes contained a "delicately adjusted but permanent combination of rare and costly metals," which were supposed to develop a "force" which would cause the human body to absorb oxygen from the air and cure almost any ailment. After experts in the United States Patent Office had granted patents on these devices as "new and useful inventions" other experts proved to the Post Office Department that these devices sold under the names of Oxydonor, Oxypathor, Oxygenor and Oxybon, alleged to cure even spinal curvature and heart disease, had just as much curative effect as an empty tomato tin can with a string tied to it would have, and one

"VISUALIZE A DARKENED ROOM; A BOY, NAKED FROM THE WAIST UP, WEARING ABOUT HIS HEAD A RATHER IMPRESSIVE STRAP WITH AN ELECTRODE; A GRAVE 'DIAGNOSTICIAN,' STROKING THE BOY'S BARE ABDOMEN WITH A GLASS ROD AND BRANDISHING A HORSESHOE MAGNET OVER THE VARIOUS PARTS OF THE APPARATUS AND OVER THE HEADGEAR OF THE YOUTH."

fraud order after another put them out of business.

With the discovery of high frequency electrical currents and wireless electricity and with electricity available in nearly every home the ingenuity of quacks began to offer more elaborate forms of electrical hocus-pocus. Misquoted half-truths about the alleged healing virtues of electromagnetism played the principal rôle in bolstering up the claims of these swindlers. One is surrounded by a minute electromagnetic field when riding in a street car or whenever one is near electrical machinery, but in order to have any curative influence, such a field must be generated by powerful apparatus and applied by an expert. Yet there came I-on-a-co, or the magic horse collar, a coil of insulated bell wire with a plug that permits the coil to be attached to an electric light socket. It was claimed that this collar, placed around the neck, wrist or legs of a sufferer from arthritis, heart disease, paralysis, gallstones or mental derangement, would cure any of these ailments by "magnetizing the iron in the blood." In one of the advertisements a good-looking damsel was shown taking a treatment, and it is stated that it gave her hair a permanent wave. According to the Bureau of Investigation of the American Medical Association this fake contraption cost less than $5 to make, yet it sold for $58.50 in cash or $65 on time payments. Testimonials were offered galore, and newspaper publicity spread them all over the country until concerted action by public health organizations and business bureaus opposed to fraudulent advertising exposed this variety of humbug.

Next came the "magic blanket," a large electric heating pad, exploited under the name of Vit-o-net. A "message of hope for the sick" promised "charging the blood stream with electromagnetic energy; increase of circulation; congestion responsible for ailments fairly melts away. Poisons go out—HEALTH comes in. Vit-o-net method of maintaining health is safe, sound, sure." Testimonials from alleged scientists were proved to be issued by men on the borderline of ethical medicine, some of them with court records for previous frauds. This device sold for the paltry sum of $102.50 while business was good.

THE rankest piece of quackery of our generation was that of Albert Abrams, whom HYGEIA called "the most finished medical charlatan of our time." He capitalized the public's interest in and ignorance of radio to exploit his so-called electronic reactions. From a sample of blood taken from a person while he is facing west, but who may be a thousand or more miles away, Abrams claimed that he could diagnose the sex, race and disease of the patient by the aid of a crude electrical apparatus called the "dynamizer." Furthermore, a few turns on the dials of another electrical contraption, the "oscilloclast," would cure any form of disease by producing a rate of vibration to which it responds.

The arrangement of the Abrams hoax, according to *The Journal of the American Medical Association,* was reminiscent of one of Goldberg's inimitable cartoons, depicting a fearful and wonderful device for waking one up in the morning, committing suicide or something equally interesting. "Visualize a darkened room; a boy, naked from the waist up, standing in the center of the room on a pair of metallic plates, and wearing about his head a rather impressive strap which carries an electrode; a collection of crude electrical apparatus on a nearby table with a maze of wire; a grave 'diagnostician,' sitting in front of the boy and

stroking the latter's bare abdomen with a glass rod. A small piece of blotting paper containing a tiny blot of blood had been placed in a receptacle known as the 'dynamizer,' a horseshoe magnet meanwhile being brandished over the various parts of the apparatus and over the headgear of the youth." According to Abrams a drop of blood contains millions and millions of electrons and they, in turn, furnish a true picture of the state of health of the individual if they can only be gathered, sorted out or tuned after the fashion of a radio receiver and then detected. A perfect or near-perfect specimen of humanity served as the detector or "reagent," and various settings of the machine switches were allegedly to represent various disease values.

IN SPITE of the all too evident absurdity of Abrams' "method" it created much excitement in its days. Abrams, although originally a qualified physician, refused to submit his method to an impartial investigation by trained medical men and, as quacks usually do, charged the medical profession with jealousy and ultra-conservatism. He enlisted the support of prominent laymen, among them Upton Sinclair of California, who rushed into print. Abrams did a land office business for a while by renting out his machines at $200 down and $5 monthly rental to physicians of questionable standing and various cultists, who profited at a rate of $1,000 or $2,000 a week from the rush of laymen attracted by the advertising propaganda. The bubble finally burst when test after test by unbiased scientists failed to show any evidence of the value of Abrams' claims. An investigating committee of the *Scientific American* found that the so-called electronic reactions simply do not exist, and it was not long thereafter that the whole fraud went down in disgrace. It was sad evidence of the general intelligence of the public, however, that Abrams' idiotic scheme could stir up so much false hope and rob so many people of the last remnants of their health and money, in spite of the warnings given by medical organizations and physicians of standing.

Successors of Abrams in the field of fake "radio remedy" exploitation are relatively small fry. They are being caught one by one as the searchlight of scientific investigation is turned onto them. There was a "Doctor" Orrin W. Joslin who concocted the Biotactos, a mongrel outfit supposedly using radio waves, about ten years ago and opened an elaborate set of offices on Riverside Drive in New York. He, of course, also claimed to cure all ailments in existence by this new method. He could cure tobacco and narcotic habit by putting a drop of saliva of the patient on a piece of blotting paper and place this in the miracle machine of his manufacture. His whole scheme was exposed by a clever reporter of a New York daily paper. At a hearing before experts, when the worthlessness of his outfit from an electrical standpoint was proved, he boldly stated that his radio machine did not need either a current or batteries to work, the box and the control knobs alone being needed to do the trick. He was convicted and sentenced for the illegal practice of medicine.

Radio advertising offers a new channel of exploitation to health fakers. No adequate and prompt measures are as yet available to curb venal radio stations from selling "time" to any one who pays the price. It took several years of combined efforts of the National Better Business Bureau, Inc., and the Federal Trade Commission to stop radio advertising of another glorified "magic horse collar" concern, the Theronoid, one of the numerous imitations of the I-on-a-co. A few hundred turns of insulated battery wire, eighteen inches in diameter, when plugged into an alternating current socket and placed around the victim's body, are supposed to cure by "electromagnetism" asthma, arthritis, bladder trouble, insomnia, lumbago, nervous disorders, neuralgia, neuritis, rheumatism, sciatica, stomach trouble, varicose veins and high blood pressure. At a hearing before the Federal Radio Commission it was brought out that no salesman had any hesitation in selling the device to persons who had only direct current supply in their homes, although no electromagnetic effects of any sort can take place on direct current. May 12, 1933, the Federal Trade Commission ordered that Theronoid, Inc., cease advertising that the use of its appliance produces a physical therapeutic effect on the human body or is likely to aid in treating diseases.

THE latest trickery in exploitation by radio of electrical appliances for the treatment of disease is the selling of small diathermy machines to the public. "If you are troubled with the terrible pains of Rheumatism, Lumbago, Sciatica, Neuritis, Arthritis, Bronchitis, Asthma, Pneumonia, Hay Fever, or other similar ailments, get in touch with us at once, because we can help you with our marvelous electrical apparatus called the — — — — — DIATHERMY MACHINE." "The word DIATHERMY means heating through. The heat that emanates from the electrodes connected with this machine penetrates deeply into the affected tissues and inner organs giving immediate relief. We have seen some bedridden with rheumatism so severe that they could not move around or attend to their daily work, yet after a few treatments of this Diathermy they found themselves so greatly relieved that they were able to resume their work."

It is a fact that scientifically applied diathermy is of value in certain cases when used

by competent physicians, but no layman can diagnose his own illness and decide that he needs diathermy; furthermore not even a small diathermy machine is safe in inexperienced hands, for severe burns have occurred through its use. It takes expert handling and a powerful apparatus to get penetrating heat. In patients in whom real diathermy is advisable, results are achieved in from six to twelve treatments in the average case, and these can be rendered by a competent physician for less money and much greater safety and efficiency than it costs to buy one of the toy machines. It must be remembered also that in most cases full success depends on additional treatment measures, such as regulation of habits, diet and drugs, which can be advised only by the experienced physician.

The crafty salesmen of concerns advertising such inefficient diathermy appliances will, of course, sell their toy machines to anybody, whether or not he needs it. There is on record a case of a poor laborer with advanced heart disease and swollen legs who was told by a salesman that he could safely apply diathermy for this condition and was inveigled into spending $120 for an apparatus; in another case, a woman with absolutely hopeless advanced crippling rheumatism was promised relief, and her last $100 were taken. It is hoped that pending federal legislation for advertising devices under false claims will ultimately put a stop to this form of exploitation.

The evolution of the crude electrical contraptions of former days into the elaborate glittering fakes of modern times is an interesting illustration of how quackery continues to prey on ignorance and credulity in spite of all modern technical progress. The quacks know quite well that there are always people who will listen to any loose talk on health and who can easily be persuaded to throw good money away for worthless contraptions exploited by swindlers with a ready flow of smooth language. The stock argument of all quacks is that the medical profession is too conservative and is jealous of their marvelous "invention." They have no trouble in securing testimonials from deluded or bribed laymen, and the case is further propped up by statements from "experts," unknown in the ranks of scientific medicine.

Electricity is indeed a blessing and an essential need nowadays; without its use in some form or another the modern practice of medicine would be just as seriously handicapped as would be our everyday lives if electricity were suddenly removed. But beware of the fellow who recites over the radio or proclaims in advertising pamphlets marvelous cures by some new electrical devices. He is the modern personification of the discredited traveling medicine man of the pre-electric period.

The Riddle of the Blood Relation

(Continued from page 20)

"Now the situation becomes somewhat complicated. I think I can give you the general idea—I hope so, anyway. Suppose we took some human blood serum and injected it into a rabbit's veins or into the circulatory system of some species other than human. When we have introduced it into the rabbit's blood we have put in something that doesn't belong there, something that constitutes a foreign body, as it were. Now no body, human or animal, likes foreign invasions, and when one occurs it at once sets in motion a train of varied phenomena, the purpose of which is to dispose of the foreign substance. That is the basis of what we call immunity; that is, the various and sometimes very complicated reactions which are utilized to fight disease.

"Blood has a large content of protein, which is only a technical way of saying albuminous substances. So, to remove this foreign protein the rabbit's blood acquires the property of precipitating or throwing it out of solution. In technical terms it manufactures a precipitin. Is this getting too involved?"

"I think I'm keeping up with you," said Carey.

"We're all right so far, then," continued Trebor. "Now it is possible by means of repeated injections of small amounts of the human serum into the same rabbit to make the rabbit manufacture a lot of precipitin; in this case we'd call it antihuman precipitin.

"Eventually, we'd find that the rabbit's serum would precipitate the protein in a very weak solution of human blood, even up to a dilution of one part of blood in a thousand parts of water. Now you can begin to see what's coming, I hope.

"Now we'd make an extract of the suspected stain and dilute it approximately one to one thousand. Then in a small test tube we'd place a small amount of the rabbit antihuman precipitin serum, and on top of it we'd put a layer of the diluted stain extract. If this solution was made from human blood, at the point where the two solutions met after a while we'd see a band of precipitated protein. If the stains were not blood or were some blood other than human blood which *(Continued on page 91)*

TOYS AND GAMES THAT TEACH AND TRAIN

By Billie Teel Mettel **Part I**

IN RECENT YEARS many of our ideas concerning the education of children have changed. Today we know that the training of a youngster is not something that may be handled indifferently or perhaps neglected entirely until he reaches the school age and is turned over with fervent sighs of relief to the school teacher. Today no progressive parent thinks of his child as merely a reproduction of himself. He is seen as a distinct personality, living an incredible mental and emotional life of his own, demanding from parents intelligent guidance and respect. It is no longer considered enough for a child to be well fed and clothed. The early years of childhood have now been recognized not merely as vegetative but as plastic and formative, influencing in a large degree the child's future character and personality.

It is not my purpose to delve into the field where psychologists, physicians and child experts have done so much careful research but rather to review toys and the new, more intelligent conception of their merits and demerits. For because of this saner attitude toward children the question of playthings becomes intriguing and at the same time challenging.

The child's education begins at home, early in life. Until the school age he spends much of his time with his toys. The choice of toys is obviously a matter of great importance to all thinking parents. Toys have become carefully planned objects calculated not only to please and amuse but to educate and develop. They are now seen as the tools of a growing personality.

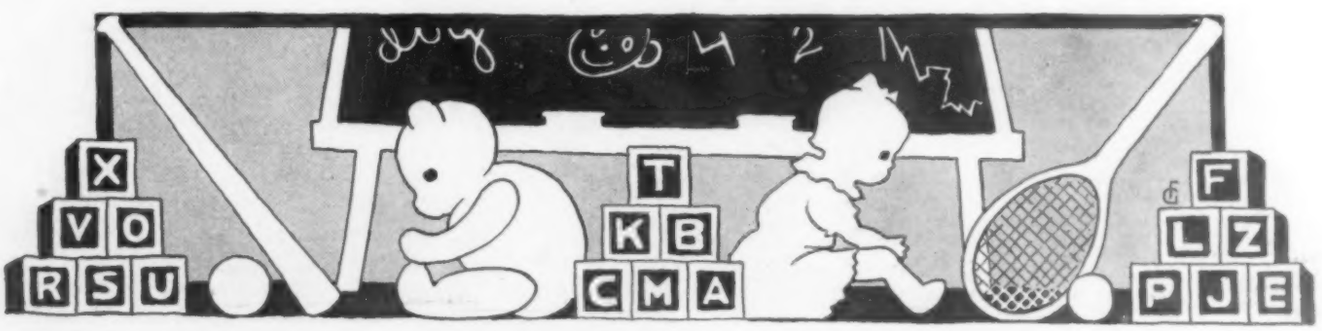
During infancy the child goes through an extremely important stage of his formative period. To him soft balls and hard rattles and the various objects which squeak and rattle become the materials through which he makes thrilling and important discoveries about the world in which he lives. When he learns to grasp a ball or blink his eyes at the anticipated noise from a rattle, he is discovering vital facts about his ability to do things.

A toy of the right kind may educate the older child as truly as sums in arithmetic. It assists him in acquiring first-hand, concrete information on which the beginnings of his reasoning power must be based. The boy who operates a miniature Diesel motor or a streamlined electric train will have a vast fund of knowledge to give significance to his understanding of electricity from his textbook. Likewise, fractions are not such a jumble to the child who has learned by putting blocks together that the whole is the sum of all its parts.

Because of the influence on the plastic personality of the child, toys may be dangerous. Children differ from one another as decidedly as adults. The lazy child, the grumpy, the energetic, the creative, the cheerful and the destructive child are all definite personalities, and the encouragement or suppression of the good or bad traits may be helped by the selection of the correct toys.

MANY parents think of a toy as merely a source of pleasure, something that will soon be put away with the rest of "childish" things and is therefore not worth bothering about. "How much will it cost?" and "Will he like it?" are two questions which the parent asks himself when either his conscience or a definite occasion such as a birthday or holiday prompts him to buy a toy for his child. At the present time, when such a variety of novelties and toys scream at shoppers such an indiscriminate attitude is fraught with dangers. Carelessly bought toys are likely to do more harm than good.

If a child expects his mother to bring him a toy every time she goes down-town, he may soon develop undesirable traits of extravagance,



indifference and fickleness. Easily broken toys encourage destructiveness. The child thinks "it will break anyway" and suits his action to his thought. A "do-nothing" toy in which the child is not expected to pull, push or work pedals discourages initiative and promotes mental laziness.

On the other hand the enormous range of really fine and useful toys available today offers many an opportunity to enrich and develop the child's personality.

For a better understanding of toys it would be well to know their history, how they were developed through the ages and for what they were originally intended. Such a survey is a good foundation for the intelligent use of toys today.

The toys of the infant have always been fundamentally the same. An infant's range is limited to a few activities. He can first grasp an object and then move it. When the object makes a noise it is doubly interesting. Thus rattles were invented in all parts of the world. Rattles have been dug from early Bœotian village sites and from Egyptian tombs. Greeks made elaborate ones of ivory. American Indians made them of dried gourds and pottery, with hollow handles filled with pebbles as the noise makers.

Teething rings are spoken of in early Greek records, and "pacifiers" soaked in sweetened water were given to babies centuries before the birth of Christ. A wooden crocodile with a movable jaw which waggled in a ferocious manner was the property of an Egyptian tot 3,000 years ago. Miniature boats were favorite playthings among the Phoenician children. Various archeologic expeditions have unearthed horses with chariots and even that stock nursery piece, a toy horse on wheels, all made of pottery dating back as far as 1500 B. C.

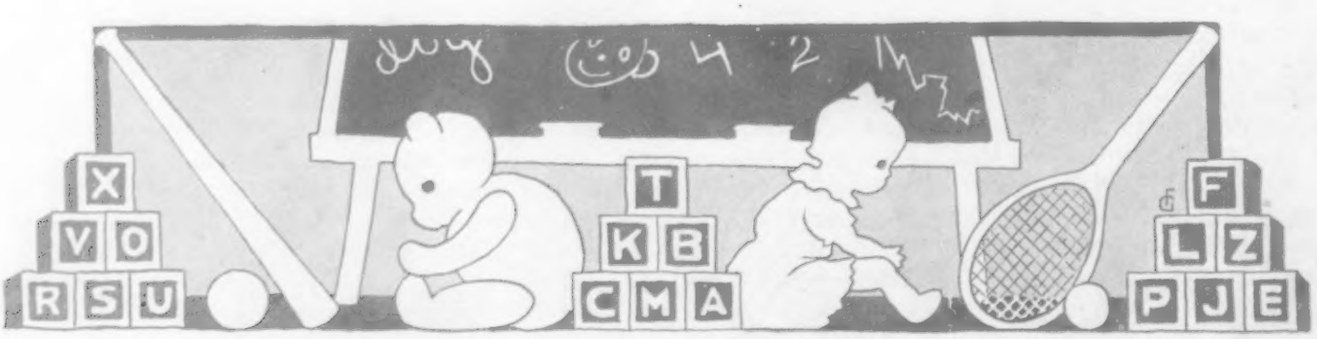
Dolls are probably the oldest of all toys. They have played a rôle in history for so long that their beginning, like the beginning of the human race, is lost in the mists of time. Even the derivation of the word "doll" is a matter of conjecture. The accepted theory is that the word is derived from the Greek word meaning image, or idol. But before the doll began to respond to such names as Mary Jane or Dolly and became the exclusive property of little girls it had a very thrilling history. In France and near Vienna, archeologists have found what may reasonably be called the first figurines fashioned by the hand of man. They are known as Venuses and were obviously objects of religious worship, although their squatness and obesity have no resemblance to any Venus carved by Greek sculptors.

No one can tell what the events were that caused these figurines to lose their religious significance, but it may be surmised that during some transition period the idols failed to retain their importance among the elders and fell into the hands of the children. They became such a source of entertainment for the young that they were copied and thus became the first authentic toy. The original dolls had been carefully made, but the copies were crudely made of wood. The best proof of all that the doll had finally become mundane is the fact that it had a broad grin on its painted face. Surely none of the awesome deities of that time would have been so undignified as even to look pleasant, much less to smile.

Dolls did not remain humble for long. It was a long step from the Bœotian dolls with bell-shaped and hollow bodies to the exquisite Greek dolls carved of bone and ivory, but the dolls made it in a comparatively few centuries. The Greek dolls were exquisite. Some were nude, to be dressed; others had their costumes carved and gracefully draped. Usually the dolls had smiling, happy countenances. Human hair was often put on their heads by means of small wooden pegs. The eyes were inlaid with precious stones.

Less is known of the dolls of the middle ages than those of antiquity. The primitive standard of living and the almost total lack of comfort in that somewhat rough era did not foster elaborate amusement for the young. No historian mentions a toy. Among private collections in Europe there are a few clay dolls of this period and one very lovely lady seated on a palfrey, but even this may have been for the delight of an adult rather than for the inconsequential child of the dark ages.

In the sixteenth century, what might be called a renaissance of the doll took place. Dolls became very costly. One record tells of a doll sent to the infanta of Spain that cost 22,000



francs. So beautifully and carefully were dolls made that they were sent to all the countries of Europe from France to represent the latest styles in ordinary costume and in fancy dress.

In this country also dolls went through the evolution from the temple to the nursery doll. Dolls found among the Mohave and Yuma Indian tribes were made of pottery and were first used by medicine men to acquaint the tribe with the appearance of tribal gods. Mere words cannot describe their ugliness.

THE first European doll brought to this country was given to an Indian girl by a member of Sir Walter Raleigh's expedition when it landed in Virginia. The excitement the doll caused among the natives must have been noticed by the English, for John White, the official artist, depicts it in one of his paintings. Another member wrote, "The little [Indian] girls wear [were] greatlye pleased with the puppets which wear [were] brought oute of Englande." The distinction of ownership may well be imagined. What an incredible being the fair haired, blue eyed doll must have been to the little savage who had never seen a blond or a woman dressed in the high ruff and full skirt of the Elizabethan period.

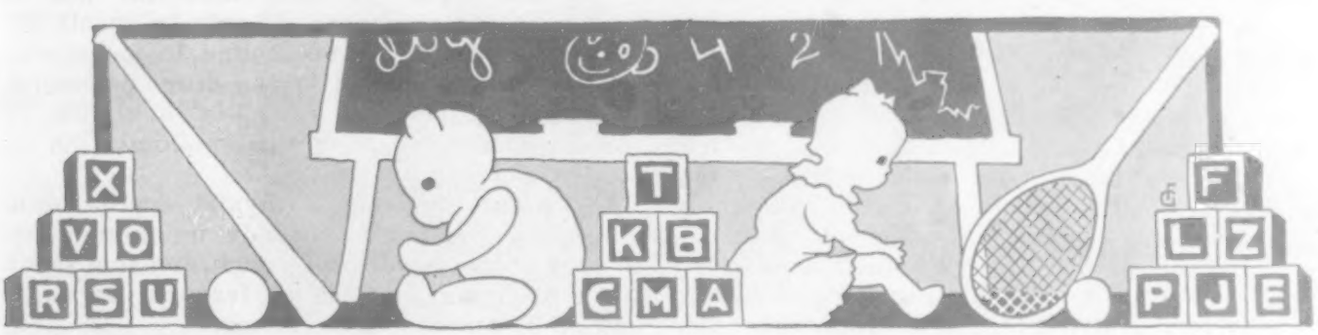
Oddly enough, some of the best dolls of antiquity were found among the Eskimos. Dolls of this early period were made of walrus ivory, perfect in every detail. Brown with age, jovial of expression and clad in well worn Eskimo costumes these dolls are mute testimony of the warm affection held for them by their young owners. Some of the dolls' heads were skilfully hollowed out so that grinning mouths were full of tiny teeth, suspended by filaments. When the doll was held upright the teeth showed; when it was put down they disappeared. The only explanation for this extraordinary development of dolls among the Eskimos seems to be that with adults and little ones cooped up together in the cramped space of small huts during the long winters, the elders had to do something to improve the situation and escape the innumerable questions which their children must also have asked!

From the sixteenth century until today the parade of the doll has included those with china heads that broke easily, or with wax faces and complexions that could be scratched off, papier-mâché dolls that could be nicked; dolls with stuffed bodies that bled saw-dust and quickly lost arms and legs, and dolls whose dresses became soiled and torn, each mishap a great tragedy in the life of the youthful owner!

Will the doll become less popular than it used to be? Perhaps with the movies and the spoon fed entertainment that is being given the children of today its appeal may wane. Yet, on the whole, the doll appears to be maintaining its own. Statistics prove that there are at least 200 million dolls in the United States. The birth rate of the doll is therefore twelve times greater than the human birth rate. As a result of improved construction the average life of a doll has trebled in length. It seems unlikely, therefore, that the doll will disappear in our own or in our children's span of life.

THE history of toys for boys is more difficult to trace. The range and interest of a boy is constantly changing. In him the creative instinct is more strongly manifested. He is much more concerned with recent inventions. The little red wagon has long since given way in popularity to the pedaled automobile, and the automobile to the airplane, just as the steam type electric engine is now relegated to the attic in favor of the Diesel streamline locomotive. Consequently modern toys for boys, as a rule, bear little resemblance to those that cluttered the corners of ancient marble villas in Greece or fell in the moats of medieval castles.

However, many toys have always had distinct and widespread appeal. Noah's ark has been a best seller since the spread of Christianity. Greek boys in the golden age had the equivalent of the modern express wagon. In one of Aristophanes' comedies a reference is made to one of these which cost an obulus, or about three cents, in the market place. It is startling to find that mechanical toys have a much more ancient and venerable lineage than one would expect. Even in classic times there were mechanical figures so elaborate that they could scarcely be classed as toys. Aristotle in 40 B. C. tells of the forerunner of the modern robot in his description of a figure of Venus that walked. Hero of Alexandria had a well earned reputation for his automatons, dancing figures and moving ships. *(Continued on page 46)*



P. A. D. Prevent . . Asphyxial . . Death

Part I

By PALUEL J. FLAGG

A SUDDEN cry: "Help! help!" A man is drowning. Life guards reach the spot in the twinkling of an eye. A limp body is dragged through the water, carried to the dry sand and laid face downward. The guard straddles the hips and bends rhythmically over the prostrate body—not an uncommon sight on a summer beach.

The problem presented by submersion, however, is unique, for while time is the most important single factor in the application of treatment, everything seems to conspire to reduce this narrow margin of safety. Submersion usually occurs at a point remote from medical assistance. The lake at the summer resort, the swimming hole, the overturned canoe in the river or the swirling currents off the city docks claim most of the victims who do not drown at the large public beaches. While a remote location may seem inaccessible the conditions obtaining on the great city beaches must be experienced to be understood.

Given sufficient carrying power it seems a simple matter to arrange for the immediate removal of a patient from the water's edge to the ambulance. The reverse is often the case. The rescue squad was called to such a patient on the hot afternoon of July 9, 1930, the patient being reported at a sector on the Coney Island beach. Riding on a specially equipped ambulance we tore our way through the seething multitude, hard on the wheels of the police emergency truck, whose screaming siren helped to open a path. We ploughed through the jam of cars cluttering the side streets to the edge of the board walk and, as prearranged, piled out of the bus, each with a portion of our equipment, in the general direction of the accident. We ran over the board walk, the curious crowd obstructing our progress and hundreds closing in on our wake. Once over the board walk, we found ourselves in a sea of faces, arms and legs as far as the eye could reach. This multitude was entirely indifferent to our progress and to our purpose. Women, babies, lunch baskets and beach paraphernalia obstructed our every step. Within two minutes we were completely separated one from the other. Looking for an observation point in this sea I spied steps to the walk. Making my way thither I found two of our party already there, but the fourth member could not be seen. There was no sign of the patient, no sign of the emergency squad; so, surrounded by curious faces, we made our way back to the ambulance as to an island of safety. Waiting here for something to turn up we were found by the ambulance driver, who reported that our lost confrère, who by the way had nothing but the stretcher for equipment, had found the patient and was treating her as best he could awaiting our arrival.

BUT now that the summer has ended, the temperature is dropping. With the falling of the leaves comes frost. The automobile is cranky; a run down battery or a carburetor out of commission makes difficult starting. You think you'd better warm up the engine for a few minutes. The strong wind blows the garage door shut, and you let it stay shut, for the wind is chilly, and you may catch cold without a coat and hat. In five minutes the engine picks up nicely and begins to purr; you turn to open the garage door; your knees give way; everything becomes black. If help is not near you will die from odorless, tasteless, lethal carbon monoxide.

"Well," you may say, "what has carbon monoxide to do with drowning?" It has everything to do with drowning for fundamentally the two accidents are identical; each is impending death from acute asphyxiation or extreme oxygen want.

The discovery of the intimate relationship of many forms of accidents hitherto looked on as in no way related is the immediate reason for the present movement to prevent asphyxial death. The connecting link between these apparently disconnected causes of death is that artificial respiration is the first treatment instituted in each. Without this artificial respiration the patient dies. To understand the test of asphyxial death, one needs only to recall the immediate treatment demanded by anesthetic accidents, smoke poisoning, drug poisoning, asphyxia of the new-born, the inhalation of foreign bodies, strangulation, poliomyelitis or electric shock.

On adding together asphyxial deaths occasioned by the causes already mentioned one arrives at the astonishing conclusion that death from asphyxia is twice as frequent as death caused by automobile accidents.

The following figures, taken from the records of the bureau of vital statistics, New York City, appeared in the *American Journal of Surgery* for December 1932. They indicate the high mortality due to asphyxia when its various causes are integrated. Conclusions drawn from these figures initiated the present movement to prevent asphyxial death.

Cause of Asphyxia	1931		1934	
Submersion	442		460	
Lightning	0		1	
Electric shock	25		25	
Drugs	0		55	
Anesthesia	42		122	
Illuminating gas	305		679	
Other gases	28		67	
Mechanical suffocation	33		244	
Conflagration	59		86	
Total		934		1739
Stillbirth	946		781	
Atelectasis	336		172	
Pulmonary complication	158		158	
Premature birth	426		460	
Total		1866		1571
Total (General Asphyxia)		2800		3310
Various Other Causes of Death				
Typhoid	77		77	
Diphtheria	156		103	
Auto accidents	1298		1145	

The following figures on suicidal and accidental deaths in the state of New York were furnished by the state department of health:

Cause of Death	1930	1931	1932	1933	1934
Suicidal:					
Poisonous gas	749	795	858	698	599
Hanging or strangulation	489	549	543	530	469
Drowning	114	93	98	89	96
Accidental:					
Absorption of poisonous gas	666	516	528	414	448
Mechanical suffocation	103	102	94	82	76
Electric shock	82	68	50	60	65
Drowning	942	955	882	896	870

Figures of national scope are furnished by the Department of Commerce through its Bureau of Census, Division of Vital Statistics. The following figures are for 1933:

Cause of Death	Number of Cases
Submersion (suicidal)	980
Submersion (accidental)	6,219
Lightning	372
Electric shock	575
Poisonous gases	2,694
Absorption of poisonous gases	1,594
Mechanical suffocation	934
Conflagration	1,521
Hanging or strangulation	3,543
Total	18,432

The announcement of these surprising facts elicited the usual prompt response from medical leaders. In February 1933 a society to prevent asphyxial death was chartered in New York State. As the work progressed numerous conferences were held, and a large board of medical leaders was assembled. By June 1934 the society had accomplished the remarkable feat of securing county, state and national approval for its work. The approval of the American Medical Association was accorded in Cleveland, June 12, 1934, when the House of Delegates voted to endorse the aims and purposes of the society.

ASPHYXIAL death gives no warning. It strikes like a bolt of lightning. One cannot practice means of prevention and treatment at the time of the accident. One must be prepared when it comes.

An eminent physiologist has pointed out that regardless of statistics a death in one's own family is 100 per cent mortality. Any one of us may be the next victim. Help the medical profession and help yourself toward the prevention of asphyxial death.

[NOTE.—In the February issue, Dr. Flagg will present another article on the prevention of asphyxial death.]

IF ARTIFICIAL RESPIRATION IS GIVEN PROMPTLY THE FATAL EFFECT OF ELECTRIC SHOCK, DROWNING AND ASPHYXIATION CAN OFTEN BE PREVENTED.

GLANDS—Their Influence on Body Build and Behavior

By H. S. RUBINSTEIN

Part I

NOT BEING CERTAIN OF HIS COMPANION'S OR HIS GANG'S ADMIRATION HE BUILDS UP A SORT OF DEFENSIVE PERSONALITY THROUGH WHICH HE BECOMES THE "HARD GUY."

THE FORM of the body and the expression of that form which is called behavior have been topics of interest from time immemorial. Although no scientific data on these two subjects exist in early literature, their variable nature is manifest through the "dragons" and "tom thumbs" of folk-lore, the "monsters" of mythology, the biblical stories of such giants as Og, king of Bashan, and Goliath of Gath, and the historical accounts of the dwarfs of early Egypt who were kept at court because of their childish humor.

While freakish individuals may be considered as the end-results of "experiments of nature" in which nature has caused "something" to go wrong, it has been possible within recent times to repeat some of nature's tricks in the laboratory and in that way produce abnormal forms and unusual behavior artificially.

It has thus been found that while the make-up and actions of an individual depend on the harmonious working together of all parts of the body, some of these parts are more influential than others. One of the most important sets of organs involved in this capacity is made up of the glands of internal secretion.

By gland is meant an organ in the body which produces a juice, fluid or chemical that is not manufactured by other organs. If the substance thus made leaves the body as a waste product, as for example in the case of the kidney, it is called an excretion. If, on the other hand, the gland product is something useful and remains within the body, as for example in the case of

the liver, it is called a secretion. Furthermore, a secretion may leave the gland which produced it by one of two ways: either it may pass through a little tube known as a duct, which leads the juice from the gland into some neighboring organ such as the stomach, or it may be poured directly into the blood without the aid of a duct. In the latter case the gland is called a ductless gland; it is also known as an endocrine gland, or a gland of internal secretion.

Since the endocrine glands pour their juices directly into the blood to be distributed to all parts of the body their effects become far-reaching. In many instances these secretions, in spite of their wide distribution, seem to affect only other glands of internal secretion which in turn affect still others, thus forming a truly complicated chain of events.

This complex group of organic activities which help maintain body form and behavior may be at least partially understood by a systematic consideration of each endocrine gland and its chief functions. These glands may be considered as two groups, depending on how well their functions are known.

IN THE first group may be placed those glands which have been proved beyond a doubt to possess one or more specific effects. This group includes the pituitary, thyroid, parathyroid and suprarenal glands and the ovaries, testes and pancreas.

The second group consists of other glands whose endocrine function is more or less accepted, but whose activities are less accurately known. The liver and the pineal and thymus glands fall into this group. Other structures in the body which are also considered endocrine glands but in which the functions are still more obscure will not be included in this discussion.

The pituitary gland is perhaps the most widely studied gland today. It is frequently called the hypophysis because it grows at the base of the brain. In man this gland is about the size of a filbert nut; it rests in a small cavity on the floor of the skull quite close to the nerves of vision and is attached to the brain itself by a thin tubular stalk. Although considered a single gland, it is made up of three distinct parts termed the anterior, the posterior and the intermediate lobes.

The anterior lobe of the pituitary gland produces a secretion which has approximately twelve different effects on the body. These effects are produced by various chemicals, called hormones, which are present in the secretion. The word "hormone" has been applied to these specific substances because they arouse activity or changes within the body. All hormones have not yet been isolated, although several of the more important ones recently have been made available for use. Among these are the growth and sex hormones.

When the growth hormone of the anterior lobe of the pituitary gland is properly prepared and used it produces generalized body growth, so that an animal may be made to grow larger than its normal size. However, it must be remembered that growing larger may mean taller or broader. If the animals are treated before their bones have knit, the growth appears to be normal; that is, the bones become longer and wider. If, however, an animal has already reached the age when the bones have knit, the giving of the growth hormone leads not to a lengthening but rather to a widening of the body. The reason for this is that after bones have knit they cannot grow longer. This is extremely important since the best results of treating a growth defect in the human being will be achieved only if the treatment is begun at an early age. Furthermore, in regard to the use of growth hormones on the human being it is best not to try to increase a child's size if he is already growing normally. There is some evidence at hand which shows that growth produced beyond the normal may not be as perfect as it is anticipated to be. This statement is based on the fact that when rats were made to grow in excess of their normal growth, their brains failed to become correspondingly large. Since the brain ordinarily becomes larger as the body grows taller, any attempt to make a child taller than he should be if he were growing normally may lead to imbalance such as that already mentioned.

THE question then arises how one may know when a child is growing normally. Generally speaking, if a child's height and weight approximate those figures listed in the usual tables of body measurements the growth is probably normal. If there is not a close agreement between the height and weight of the child and the average measurements listed in these tables it is advisable to have the child studied carefully. Without going into the details of such a physical examination, suffice it to say that a child whose parents are both short would naturally tend to be shorter than another child whose parents are both tall. It follows that if a child of tall parents is short, and the other children are quite tall, this child is probably abnormally short. At any rate, he should be examined. It seems fairly safe to say that the abnormally short child of tall parents responds better to growth hormone treatments than does the short child of short parents. This teaches an important lesson; namely, that while the growth hormone may influence growth it does not alter the general growth pattern of the family.

The effect of the growth hormone on behavior is also quite important. This influence appears to affect the individual in an indirect manner.

This statement will be better appreciated if it is recalled that human behavior depends on a

number of factors, the chief one being the "make-up" or constitution at the time of birth. This represents the sum total of every important experience that the child's ancestors have lived through. At the time of birth the individual may be considered as an unripe fruit which is placed in the new soil of his earthly surroundings in order that he may continue to grow and develop in preparation for the activities demanded by nature and society. What the individual eventually becomes depends both on the material with which he started out, his constitution, and the soil in which he grows, his environment.

How the growth hormone may indirectly influence the behavior of an individual is well exemplified in the fact that the short boy behaves quite differently from his taller companion. The tall boy is more or less secure in his own little world of children and therefore is frequently found to be quiet and unruffled. The short boy, not being so certain of his companion's or his gang's admiration, builds up a sort of defensive personality through which he becomes the "hard guy." The little child, unless carefully guided, adores only the prowess of those with whom he comes into contact.

Being the so-called "hard guy" does not necessarily mean that the child is bad. It may mean that he will more readily become a leader of his companions, since he is always ready to show more daring and courage in his play. The abnormally small child's realization of the difference between himself and all other children frequently becomes quite painful. This was evidenced in the case of a young girl over 16 years of age who applied to her physician for treatment "because of shortness" and with tears in her eyes bemoaned the fate which had caused her to remain unnoticed while her girl friends were beginning to "go to parties."

While many children who are growing abnormally are troubled also by sexual disturbances this is not necessarily always the case. A consideration of the sex hormone will help to explain why this is so.

The sex hormone is also produced by the anterior lobe of the pituitary gland. When present in excess it is responsible for early sexual development, and when insufficient in amount it leads to delayed sexual ripening. This hormone seems to be a stimulator in both sexes. Its effect, however, depends on the sex glands already present in the body. In the male it stimulates the testicle while in the female it activates the ovary.

The effect of the sex hormone on behavior is best noted during the so-called crucial periods in the sex life. For example, every one is familiar with the sudden change in the young girl when she first enters into womanhood; she exhibits much greater reserve; she is more motherly in caring for her younger brothers and sisters and more sympathetic with her mother, and in some instances, she begins to take an almost adult interest in the family budget.

In boys the effect is not quite so marked because the change occurs more gradually and in a less dramatic way. However, the boy may become shy during adolescence and at the same time display a sudden prowess and aggressiveness in athletics.

Since the sex and growth hormones are substances quite distinct from each other they may be involved separately; but since they come from the same gland they are frequently involved together. This is particularly true in cases in which the pituitary gland becomes unusually large, a condition known as tumor of the pituitary gland. In these cases not only are growth and sex disturbances present, but severe headaches, vomiting, dizziness and weakness may occur. At times even blindness may ensue. Such severe symptoms are due not to a disturbance in gland function but rather to the fact that as the gland becomes swollen it increases the pressure within the skull cavity, causing headaches and other complications. The pituitary gland is situated so close to the nerves of vision that when it becomes enlarged it soon presses on these nerves and the vision is disturbed.

Sometimes, instead of the whole gland becoming enlarged, only one of the lobes may be involved. The results of involvement of the anterior lobe have already been considered. If the posterior lobe is responsible the body form and behavior are usually influenced in ways equally characteristic.

The posterior lobe of the pituitary gland is directly attached to the brain. It is a matter of question whether this lobe actually manufactures the hormones that are found in it or whether these substances are produced by the intermediate lobe and merely stored in the posterior lobe. At any rate several hormones are found in the posterior lobe. The quantity and perhaps quality of these hormones are influenced by that part of the brain which is connected with the posterior lobe. They are disturbed by any involvement of the posterior lobe of the pituitary gland and by certain brain diseases.

Whatever the cause of the disturbance marked changes may be noticed in the individual when an insufficient amount of this hormone is produced. The skin in men becomes smooth and soft. The sex function, if once normal, begins to lessen, and in children it fails to develop normally. The striking change about these patients is that they take on fat very easily. The added fat has such a peculiar distribution over the body that, while the wrists and ankles remain thin, the shoulders, hips *(Continued on page 67)*

IN NOVEMBER 1789, JENNER INOCULATED HIS OWN SON AGAINST SMALLPOX
NO MATTER WHAT THE WEATHER, EVEN IN A BLIZZARD, JENNER RODE MANY MILES EVERY DAY ON HORSEBACK TO VISIT HIS PATIENTS.
ON MAY 14, 1796, JENNER INOCULATED JAMES PHIPPS, A HEALTHY BOY ABOUT 8 YEARS OLD, WITH COWPOX VIRUS. SIX WEEKS LATER JENNER INOCULATED THE BOY WITH SMALLPOX. THE DISEASE DID NOT DEVELOP. THUS WAS VACCINATION AGAINST SMALLPOX BEGUN.
JENNER'S GREAT DISCOVERY SAVED THE LIVES OF MILLIONS OF BABIES AND CHILDREN.
ADOLPH BEILIN

EDWARD JENNER

(1749 - 1823)

A Great Pioneer Physician Who Conquered the Scourge of Smallpox

By ADOLPH BEILIN

IT WAS a memorable day in the history of preventive medicine when on May 14, 1796, Edward Jenner performed his first vaccination against smallpox. For nearly twelve centuries this dreadful disease had maintained a reign of terror throughout the world. In Europe alone in the eighteenth century, 60 million people died of smallpox. Thanks to Jenner, this horrible disease has been almost completely eradicated from modern civilized society. Minor outbreaks of smallpox still occur here and abroad, but they usually originate in sections of a country or city where vaccination is not adequately practiced or where timely revaccination is neglected.

Jenner was born at Berkeley, England, May 17, 1749. When a mere youth he began his medical training under Daniel Ludlow, a surgeon of Sodbury. At the age of 21 he proceeded to London, where he continued his studies with John Hunter for a period of two years. He then returned to his birthplace to practice his profession, declining many advantageous offers of employment elsewhere. An apt student of natural history, Jenner devoted much attention to the varied geological character of the district in which he lived. He investigated various phases of biology and contributed a number of papers covering his researches to the Royal Society of England. Endowed with a charming personality and artistic accomplishments, he was a great favorite in society. He was also a good musician, a singer and a player of the violin and flute.

THE discovery of vaccination against smallpox, which made of Jenner an international hero, began when he took some virus from a cowpox sore on the hand of a dairymaid and inoculated it into the arm of a healthy boy about 8 years old. This experiment resulted in the appearance of a single pustule, which rapidly formed a scab and dried up. Six weeks later, Jenner inoculated the same boy with smallpox. The disease did not develop. Thus, despite inevitable opposition even to the present day, the method of immunization against smallpox started by Jenner spread rapidly throughout the civilized world, and the frightful suffering and the mortality due to this disease immediately

dropped. Prior to the discovery of vaccination, smallpox was principally a disease of childhood. The adult population was largely composed of survivors of this disease.

Although the germ of smallpox has not yet been isolated the disease is known to be highly infectious. One case of smallpox in an unvaccinated community is enough to start a great epidemic; but the occurrence of such a calamity can be positively prevented. Jenner has proved conclusively that vaccination is an unfailing protection against the disease. In recognition of this fact his method of immunization against smallpox was at once widely accepted and practiced throughout the world.

The recipient of many high awards, Jenner was also made an honorary member of almost every scientific society in Europe. On Jan. 24, 1823, he was stricken with apoplexy and never rallied. He died the following morning.

HEALTHGRAMS ✣ from Articles in This Issue

¶The evolution of the crude electrical contraptions of former days into the elaborate glittering fakes of modern times is an interesting illustration of how quackery continues to prey on ignorance and credulity in spite of all modern technical progress. *See page 24*

¶The discovery of the intimate relationship of many forms of accidents hitherto looked on as in no way related is the immediate reason for the present movement to prevent asphyxial death. *See page 32*

¶Although women are sick more often than men their illnesses are less important from the standpoint of endangering life. *See page 22*

¶Problems that face medical science and can often be described lightly in a few words require many hours of careful tedious investigation by numerous individuals. *See page 40*

¶Of the six venereal diseases, those infections which are transmissible by and usually acquired as a result of sexual contacts, only syphilis and gonorrhea are of major importance to the infected individual and to the public health. *See page 50*

¶The lasting quality of the "reconstructed" mouth will depend on the ability and resourcefulness of the dentist, the dependability and sturdiness of the natural teeth that serve as its nucleus, the patient's health and metabolism, and the regularity and quality of his oral hygiene measures. *See page 43*

¶The wide-awake unprejudiced traveler who has safely escaped from the domination of fashions at home may find, on copying the natives, that he is more comfortably shod, for instance, than he has ever been before. *See page 64*

¶A happy, healthy later life depends on the detection and treatment of disease prior to the age of 40. *See page 7*

¶Disease of the mastoid bone rarely takes place unless there is or has been disease of the ear. *See page 48*

¶The progressive parent sees his child as a distinct personality, living an incredible mental and emotional life of his own, demanding intelligent guidance and respect. *See page 29*

¶The method of immunization started by Jenner against smallpox spread rapidly throughout the civilized world, and the frightful suffering and the mortality due to this disease immediately dropped. *See page 37*

¶To prepare a child for adult life is a parent's big job. Too much solicitude and too tender nursing are poor means of accomplishing that end. *See page 56*

¶No other epoch in the cycle of human life presents as many rapid, successive and profound changes as those found during the time of sexual maturity of the boy and girl. *See page 58*

¶Today in the light of new knowledge we may justly place at the entrance of the modern tuberculosis sanatorium the hopeful instruction, "Cure sometimes, relief often, comfort always." *See page 6*

¶A vital factor in dietary prescribing is to avoid thinking exclusively of the local condition and to think of the patient as a whole. *See page 12*

¶It is wise to use all precautions to safeguard the body during the advancing years so that one's bodily health as well as the youthful spirit may be maintained as long as possible. *See page 61*

¶Since the make-up and actions of an individual depend on the harmonious working together of all parts of the body, one of the most important sets of organs involved in this capacity comprises the glands of internal secretion. *See page 34*

Rutz, St. Moritz

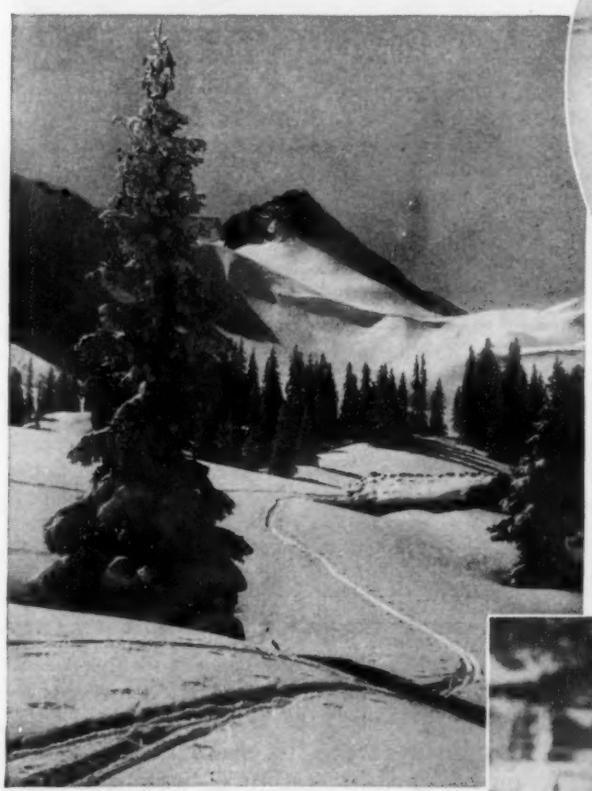
"TAILING" IS LOADS OF FUN AT BEAUTIFUL ST. MORITZ IN THE HEART OF THE SWISS ALPS.

Lo, what wonders
the day hath wrought,
Born of the soft
and slumbrous snow!

—ELIZABETH AKERS ALLEN

Galloway

THAT FIRST TURN!



Gyger, Adelboden

A VERITABLE CHRISTMAS TREE LAND FOR SKIERS LIES ABOVE ADELBODEN IN SWITZERLAND.

Meerkamper, Davos

A WINTER ENTHUSIAST.

RICKETS

An Article in Which RACHEL ASH Tells How Science Marches On

THE EVOLUTION of the conception of rickets well illustrates two characteristic features of the progress of scientific information: first, the international aspect of the contributions which advance knowledge; second, the lag that occurs until some discovery illuminates the situation and sets off a train of investigations which in a short time clarify the entire field.

In densely crowded cities and in gray, sunless regions, rickets probably existed for centuries unrecognized as a disease entity. Some such condition was described in Rome a century or so before the Christian era. It has been pointed out that in many paintings of the early Dutch and German masters, infants with classic signs of rickets have been portrayed.

Not until the seventeenth century was a disease named rickets described in medical literature. In 1645 a young Englishman named Daniel Whistler presented as his thesis for the degree of Doctor of Medicine at Leyden a paper, written in Latin and entitled, "De morbo puerili Anglorum quem idiomate indigene vocant *the Rickets*" ("Concerning a Disease of English Children Known in the Idiom of the Country as Rickets"). In this paper, Whistler presents a clear description of the bony deformities of head, chest and limb and the muscle flaccidity associated with rickets. Possibly because it was a student's thesis, Whistler's paper aroused little interest. It was soon overshadowed by Glisson's classic monograph.

During the same period a group of prominent London physicians had been in the habit of meeting to discuss various scientific subjects. They had become interested in this supposedly new disease which had sprung up in the counties of Dorset and Somerset within the previous generation and which was called rickets by the country folk. In 1645 this group appointed a committee of three, headed by Francis Glisson, famous physician and anatomist, to assemble the known information concerning the disease. Five years later, in 1650, Glisson's monograph "De Rachitide" was published and immediately assumed a position of importance. The clinical aspects and the gross changes that may be observed post mortem were described so accurately that little of value can be added even in the present day.

IT WAS FELT VAGUELY THAT THERE WAS SOME RELATION

As to the cause and treatment of rickets, Glisson could only venture a guess. Nor until the present century were his medical successors on any more certain grounds. It was felt vaguely that rickets bore some relation to overcrowding and unhygienic conditions because it occurred so frequently among the crowded slum populations. There were suspicions that it might result from improper diet. When bacteria were discovered the disease was considered by many to be of infectious origin. Indeed not until 1922 did the Viennese pediatrician von Pirquet give up this explanation of its origin.

For two centuries medical understanding of rickets advanced no further than a recognition of the clinical features so well expounded by Glisson. Not until certain advances were made

BETWEEN RICKETS AND THE OVERCROWDED, UNHYGIENIC SLUMS.

in the field of biochemistry and physics was further progress possible.

In the golden age of academic liberty in Germany a group of brilliant scientists opened up new paths in the study of the body in health and disease. Rudolph Virchow of Berlin focused the attention of physicians on the cellular changes in diseased tissue. Through the stimulus of his teachings the German Pommer in 1885 clarified the histologic changes that occur in rickets. Physicians now might recognize the clinical manifestations of this disorder and the underlying microscopic changes in bone structure, but they still were no closer to an understanding of its origin.

Amidst the intellectual ferment brewing in the liberal Germany of the nineteenth century arose a great school of biochemists, pioneers in the study of chemical processes within the animal body. Through their efforts was developed a mass of knowledge concerning the chemical structure of foods and the function of such food components within the animal body. Utilizing this information certain English and American workers attempted, at first in vain, to raise animals on diets of purified foodstuffs. By their very failure they stumbled on a clue that led eventually to a better understanding of the so-called deficiency diseases, of which rickets is one.

For the present let us digress to another portion of the globe. For centuries there has existed in oriental countries, especially among the poorer classes, a disease known as beriberi. Back in the seventies, Takaki, a medical officer in the Japanese navy, experimenting with the diet of the sailors, established the fact that the substitution of barley and vegetables for polished rice prevented the onset of beriberi. Eijkmann, a Dutch physician, in 1906 first produced the disease experimentally in birds which were fed polished rice, demonstrating at the same time that the addition of rice polishings prevented the appearance of the disease.

In the early twentieth century, Funk and Hopkins in England, McCollum at the University of Wisconsin, and Osborne and Mendel at the Connecticut Agricultural Station were finding that animals which were fed mixtures of purified foodstuffs failed to grow normally, despite the fact that such diets were adequate in their content of protein, fat, carbohydrate and salts. The addition of certain natural foods, such as milk and butter, enabled these animals to survive. As early as 1906, Hopkins, the British scientist, suggested the possibility of unknown growth accessory substances. In 1910, Casimir Funk, calling attention to Eijkmann's studies on beriberi, made the statement that beriberi is a deficiency disease due to the lack of certain unknown substances in the diet and advanced the theory that other diseases may be caused by the lack of such unknown substances, which he named vitamins.

In 1913 the existence of such an accessory food factor was demonstrated in egg yolk and butter-fat by two groups of Americans working independently: McCollum and Davis at Wisconsin and Osborne and Mendel at Connecticut. This substance became known as fat-soluble vitamin A.

The Englishman Mellanby in 1919 first linked the fat-soluble vitamin to rickets. He produced typical rickets in puppies and showed that with the administration of small amounts of cod liver oil or large amounts of butter-fat, rickets failed to appear. Shortly thereafter, Park and Howland in the United States showed that calcification of the bones of rachitic infants could be brought about by feeding cod liver oil.

There followed a period of confusion because experimental studies with other substances rich in vitamin A produced conflicting results. In 1922, McCollum and his associates at Johns Hopkins clarified the situation by proving that cod liver oil contains two vitamins: vitamin A, which does not play any part in rickets, and vitamin D, the true antirachitic factor.

In the same year in which Mellanby published his experimental results, establishing the fact that rickets can be cured by cod liver oil, Huldschinsky, a clinician practicing in Berlin, reported that rickets had been cured by rays of the mercury vapor lamp. This statement was speedily confirmed by other physicians.

During the World War a great many cases of rickets developed in Vienna. At the close of the war a cooperative study directed by a group of British scientists was made in von Pirquet's clinic in Vienna. These workers succeeded with the accuracy of a laboratory experiment in maintaining large numbers of artificially fed babies free from the disease and in healing children already rachitic. In their report published in 1923 they mentioned the following factors as playing a part in the prevention of the disorder: (1) an organic factor in the diet concerned with the calcification of bone (vitamin D); (2) light, and (3) adequate amount and correct balance of the salts of calcium and phosphorus, the mineral constituents of bone.

THE mystery of the common relationship between such unlike substances as cod liver oil and light next attracted the attention of scientists. In 1924 the solution began to appear when Hess of New York and Steenbock of Wisconsin reported independently that various foods could be endowed with a high degree of antirachitic potency by exposure to the rays of the mercury vapor lamp. With the aid of the spectroscope and as a result of a series of experiments by American and German workers it was determined that the activable substance in such foodstuffs is a fatlike material known as ergosterol, which in itself possesses no antirachitic properties but acquires them after irradiation. Both the active and the inactive forms of this substance are present in cod liver oil.

Sterols are also present in the skin. The therapeutic action of ultraviolet radiation now becomes clear. Under the influence of such radiation, vitamin D effect is produced in the skin; thence the irradiated sterol is absorbed into the blood, in some way to influence the metabolic processes that lead to the deposition of calcium and phosphorus in the bones. There is at times another factor in the calcium-phosphorus rôle, that of the parathyroid gland.

The most usual source of ergosterol is yeast. It is from ergosterol and irradiation that viosterol in oil, a concentrated form of vitamin D, is prepared.

Milk is now treated to give a vitamin D effect. This may be done by feeding cows irradiated yeast; by treating milk with ultraviolet light, or by adding a vitamin D concentrate.

There are still numerous questions that await solution. We do not know how vitamin D influences calcium and phosphorus equilibrium in the fluids of the body. Nor do we know the chemical structure of this vitamin. But such a tremendous amount of active experimental work is being centered on rickets today that the time is probably not far distant when these matters will be elucidated.

FOR two centuries, knowledge concerning rickets lay fallow. With advance in physics and chemistry a tremendous spurt in information became possible. Dr. Alfred Hess of New York, who has done much to advance the frontiers of knowledge concerning rickets, states: "It [the period of development of the newer rickets] is a short span which stands out in bold relief from the two and a half centuries which preceded it. Its distinction is that it deals with entirely new factors and concepts—with experimental rickets brought about and controlled at will in the laboratory, with vitamins, with specific nutritional factors and with ultraviolet light, and with the chemical examination of the blood and the radiographic picture. . . . We no longer are groping helplessly."

It is thus that medical science often advances. A disease entity becomes recognized. Careful study is made of all possible clinical manifestations and of the changes in gross and microscopic structure. A latent period ensues, as scientists search for some clue which will lead to a potent remedy.

Thus the discovery by Pasteur of living agents underlying putrefaction stimulated medical research on the bacterial origin of disease and led step by step to the measures which today insure a purified milk and water supply and prevent and cure certain infectious diseases. Further advance in the field of immunology waits on probable further discoveries in physical chemistry. The studies by Jacques Loeb, the physiologist, on the isoelectric point of proteins enabled Banting and Best to isolate from the pancreas a substance long suspected to be there—insulin, prolonger of the life of the diabetic. Innumerable instances of such crucial discoveries that made possible advance in other fields could be mentioned.

Progress thus is gradually accomplished. The way onward is often laborious. Sometimes a worker must slip back, his labors to be forgotten or perhaps carried forward years after his death. Problems that may be described lightly in a few words require many hours of careful tedious investigation by numerous individuals. Slowly, surely, however, if not with ease, scientific medicine extends its boundaries.

MOUTH RECONSTRUCTION

Chapter XIII of
These Teeth of Mine

By
DAVID W. McLEAN

OF LATE years a new term has appeared in the dental vocabulary. Mouth reconstruction is not a scientifically correct name for the procedure it covers, but it seems that the appellation has come to stay; certainly the procedure itself has.

Strictly speaking the procedure is not new. Its aim is old. But a myriad new processes make possible its accomplishment to a degree formerly reached in dreams only.

During the patient's youth and early adult life his dental problems, barring tooth straightening, are largely those of the individual tooth. His gums are healthy and his chewing surfaces unworn. Here and there decay is found and a filling is introduced. A pulp or two may have died or been devitalized and the root canals have been filled. These have all been treated therefore as problems confined to the tooth itself. The patient may have a small bridge, not quite a problem of a single tooth but still a local one; or perhaps a vacant space in the jaw has been left empty.

The patient of middle age and beyond, however, becomes conscious of physical limitations; he realizes that from now on he must have full advantage of all his physical resources. The wastes of energy which once he ignored or scorned are now important.

He must look on his mouth and teeth in a different way. He must not ask, "Does any tooth need filling?" but rather, "How does this mouth function? How well does it prepare food for digestion, for conversion into energy, for use in rebuilding worn body tissues?"

Examination of the patient's mouth will probably show, apart from any consideration of decay or of pyorrhea and pulpless teeth which should be removed, a purely mechanical disarrangement. Some inlays and bridges may be worn flat on the chewing surfaces, and in all probability they are obsolete. Teeth that are neighbors to empty spaces left by missing teeth will have drifted perceptibly out of line, and the jaws will articulate the worse for it. Perhaps the double teeth have all worn flat, as they frequently do by middle age. All this will result in deranged and crippled chewing function.

THE PLASTER AND METAL MODEL AT THE LEFT SHOWS TEETH IN WHICH THE CHEWING EFFICIENCY HAS BEEN GREATLY REDUCED. THE CHEWING SURFACES ARE WORN FLAT; SOME TEETH HAVE BEEN LOST, AND OTHERS HAVE DRIFTED OUT OF PLACE. THE MODEL AT THE RIGHT WAS MADE AFTER MOUTH RECONSTRUCTION.

During the motions of the jaw some teeth do not meet their chewing partners of the other jaw at all. Others may be pounding themselves and their partners loose; this condition in itself calls for correction.

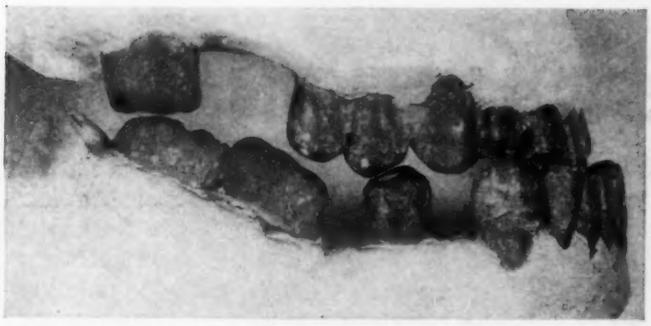
THE chewing surfaces of unworn back teeth are made up of cusps, or peaks, and valleys. When the lower jaw swings from side to side in chewing, it grinds the lower teeth across those in the upper jaw. The cusps of one jaw glide through the valleys between the cusps of the other jaw. The side slopes of these opposite cusps rub across each other like shears, cutting the food. If teeth are worn flat this scissor action is lost. The teeth can only pound or crush the food.

When teeth are badly worn only two or three may contact those of the other jaw during the chewing motions, thus adding greatly to the patient's inability to chew.

There may be fairly recent fillings or bridges which necessarily were built flat to harmonize with the worn-out teeth against which they bite. Other fillings may have been made of amalgam or soft gold, which soon wore flat. Still others may have been made flat because the patient demanded the easiest and quickest way.

The patient has now arrived at a dental crossroads. He may ignore this mechanical disarrangement of his mouth. He may have a few necessarily flat fillings introduced with perhaps a tooth or so removed and a small bridge to replace them. This patchwork policy is the downhill, easy road to false teeth. Or he may take the steeper, rougher road to mouth restoration based on the remaining healthy, natural teeth.

If he chooses the latter way he enters on a dental experience unlike anything in his past. The procedures will be different from those of



THE TEETH OF MODERN MAN DO WEAR OUT BUT NOT AS EARLY AS THOSE OF PRIMITIVE MAN. WHEN THE JAW MOVES TO THE RIGHT, THESE TEETH SHOW A WOFUL LACK OF ABILITY TO MASTICATE.

THE MODERN RECONSTRUCTION OPERATION BRINGS IMPROVED CHEWING ABILITY. THESE ARE THE SAME TEETH AND IN THE SAME CHEWING POSITION AS THOSE SHOWN AT THE LEFT.

ordinary tooth filling. The thing he needs now more than ever before is not jewelry but a condition. The procedures for producing the condition are complicated and costly. A considerable amount of his own time will be required, but even that will be only from a third to a half of the total spent on his case by the dentist. There will be some discomfort, though not so much as if some other part of the body were as sick as the mouth.

In addition to a good set of x-ray pictures and a careful examination of the mouth, a pair of very accurate models of the jaws and teeth will be required. The teeth of these models will preferably be made of metal, for they are to be mounted on an instrument and made to chew. The models of the teeth can thus be studied in action.

These models are necessary. In the mouth some parts of the teeth cannot be seen at all, especially when one is chewing. Other parts cannot be seen well, nor can enough be seen at once. The lips and cheeks are in the way.

THE basis of all restorations to the teeth is, or should be, the movements of the jaw. A filling, a crown or bridge, made as an individual, may bite beautifully when the jaw is in its rest position; but that is not the only position in which it will be used. In the chewing process it may fail wofully. So when the models are studied in motion, the motion must be that of the patient's jaw, reproduced by an instrument to which the models are attached. The models can then be made to chew as the patient does.

The movements of the jaw appear simple but in reality are complex. In the single chewing movement from the central rest position to the right the entire jaw moves bodily to the right just a short distance. The right joint of the lower jaw, located in front of the opening of the right ear, will pivot and open slightly as if on a hinge, at the same time that it moves bodily. The left joint, in front of the opening of the left ear will open on its hinge and at the same time slide forward, downward and inward, the inward component of the movement corresponding to the bodily sideshift of the right joint. The degree and angle of these movements vary in different jaws and on the two sides of the same jaw. The movements of the jaw in its various directions and positions are therefore exceedingly complex.

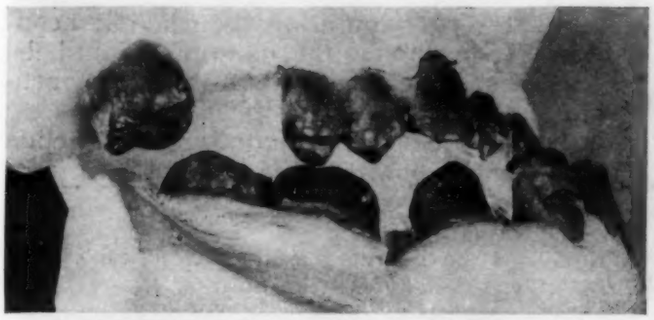
In mounting models for study or models on which to build inlays and bridges or artificial plates the first consideration is that they must be in the same relationship to the hinge of the instrument as the patient's teeth are to the hinge of his jaw. This relationship must be established with the greatest possible accuracy, or all movements of the models will be wrong; the arcs through which the tooth cusps travel across each other will be wrong. When models are wrongly mounted the tooth cusps may be arranged and shaped so they cooperate beautifully with the cusps of their chewing partners, that is, as long as they are on the instrument. When placed in the mouth, however, the arcs of movement will be different; the cooperation between the cusps will be lost, and they will fight each other instead.

After the models are correctly mounted on the instrument the biting positions of the patient's jaw are registered; the instrument, called an articulator, is adjusted so the models assume these biting positions. The adjustments are then locked. Thereafter the chewing models will be guided by the articulator.

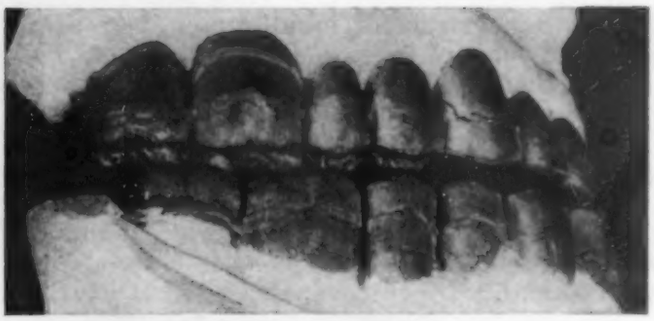
A total of from ten to fifteen hours may be spent in laboratory and operative procedures such as impression taking and bite registration, before the models are fully prepared and mounted.

In his study of the moving models the dentist will visualize the conditions he wishes to produce in the patient's mouth. The means by which he will produce them will be inlays and perhaps one or more kinds of bridgework. The inlays will cover the chewing surfaces of back teeth so that their cusps and valleys may meet functional requirements.

Many factors enter into the selection of the means to be used in mouth reconstruction; but even then the plan is only tentative. The case must be developed as though the dentist were perfecting an invention. After changing his



THE TEETH SHOWN ON THE OPPOSITE PAGE BUT WITH THE JAW IN A DIFFERENT CHEWING POSITION. THE DEPLORABLE CONDITION BEFORE THE RECONSTRUCTION OPERATION IS APPARENT.



AFTER MODERN RECONSTRUCTION THE TEETH FUNCTION IN COMPLETE HARMONY ON BOTH SIDES OF THE MOUTH. THE CUSP BLADES OF THE TEETH SHEAR SIMULTANEOUSLY AND EVENLY.

plan in perhaps a number of details the dentist may at last produce the condition, the functional action he pictured, but by quite different means than he first had in mind.

AFTER the dentist has formulated a plan of restoration the next step will be the removal of any infected teeth and pyorrhea infected gum tissue. Temporary bridges will be made to replace the teeth removed. One by one, under procaine hydrochloride anesthesia the retained natural teeth will be prepared to receive their inlays; all old fillings and caries will be removed. The mounted study models and x-ray pictures guide the preparation of each tooth. An impression of the prepared cavity is made; both cavity and tooth are reproduced in metal, and the reproduction is laid aside until needed. An inlay of gold is made for each tooth and cemented temporarily so that it can readily be removed.

Temporary bridges and inlays will not only aid the patient's chewing convenience but maintain the teeth definitely in their positions. Without them, one or more teeth might drift out of place and destroy the precise accuracy of the work.

When all the teeth are prepared the temporary inlays are removed, and new models of the jaws are made with all tooth cavities open. Into these models are incorporated the metal reproductions of the teeth and their cavities. These models are mounted on the articulator, which is again set to this patient's chewing movements. The mounted models now serve as substitute for the patient, whose temporary inlays and bridges are again put back in place; he can now enjoy a vacation while his "reconstruction" inlays and bridges are being produced by the dentist and his technician.

When the patient is recalled the inlays and bridges will be ready for adaptation to his mouth. All have been developed and produced simultaneously.

This elaborate procedure is necessary. The chewing mechanism cannot be greatly changed by inlays made tooth by tooth. The first inlay would have to be made flat to bite properly against its flat chewing partner in the other jaw. Then this chewing partner would have a new inlay, which again would have to be flat for the same reason. So in the end all the new inlays would still have the same flat chewing surfaces as before. Whether the surfaces are flat or merely wrong the flatness or wrongness would perpetuate itself in the new inlays.

THE temporary inlays and bridges present just such a picture. All inlays have been renewed, and new bridges have been made. Each one has been developed individually and has been shaped to conform to the chewing conditions, whether good or bad, that are present in the mouth.

When teeth are worn flat the patient's bite lets down or closes; the chin approaches closer to the nose, and the lips and cheeks become too long and fall into wrinkles or are pursed unpleasantly.

In the reconstruction process the lost tooth material is replaced with metal. The teeth and jaws will then be restored to their old dimensions, and the front teeth will be relieved of excessive biting strain which would have meant their ultimate loss through pyorrhea. Conditions for functioning will be better, and the appearance of the mouth noticeably improved.

This procedure is sometimes spoken of as mouth rejuvenation, but that is a poor name. It would be just as correct to say that glasses are a rejuvenation of the eyes. They simply augment a mechanism which has become handicapped by long use.

I was greatly interested in the opposite reactions of two patients who had arrived at this crossroads, where they must decide between mouth reconstruction or artificial plates. Both boasted of sixty summers.

"If I were young and healthy," said one, "it would all be worth while, but at my age I wouldn't get enough use out of it."

"Well," said the other, "it is quite an undertaking. But one thing is sure—I never needed healthy and capable teeth as much as I will from now on."

The "reconstructed" mouth may give a dozen or more years of service. It may give less. That will depend on the ability and resourcefulness of the dentist, the dependability and sturdiness of the natural teeth that serve as its nucleus, the patient's health and metabolism, and the regularity and quality of his oral hygiene measures.

Whatever the period of its service, the mouth reconstruction operation is apt to be a good investment. It enables the patient's dental equipment to carry on at an age when he needs it most. It postpones the discomforts and the reduced chewing efficiency that accompany artificial dentures.

In the end, however, the mouth reconstruction operation runs its span. The patient must part with his remaining natural teeth.

[NOTE.—In the February issue, Dr. McLean's topic will be "Parting Is Such Sweet Sorrow."]

Toys and Games That Teach and Train

(Continued from page 31)

What must have been the original tin soldier was discovered recently during dredging operations in the Seine River. In medieval times all the bridges were lined with booths in which knicknacks were sold to the constantly passing stream of travelers. Whether one of these stalls was destroyed or whether there was an unusually large crack in the floor near one of them will never be known. For directly beneath the position of one of the ancient bridges a genuine tin soldier, arrogant in posture, seated on a charging mount and clad in a splendid suit of armor, was brought up with the muck that filled the dredger. Since the history of armor is well known, it is easy to classify this soldier as older than those already discovered.

Speaking of soldiers, a wooden horse filled with toy soldiers would have no historic significance to the small boy of today. Yet records tell of pedlers selling replicas of the famous "Gift Horse" on the site of the ruins of Troy to "trippers" coming there sightseeing several centuries before the birth of Christ. One can almost imagine the equivalent of "Souvenir from Troy" written on one side.

The history of games has many interesting angles. Since competition has always been an important issue in group play, competitive games have been in existence through the ages. Hop-scotch disks date back to prehistoric times; tit-tat-to has been found scratched on cave walls, and blind man's buff is depicted on Greek vases.

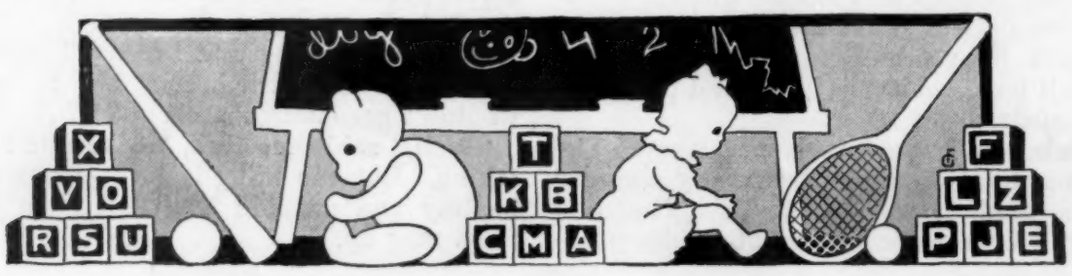
To the American Indian can be traced a great many of our modern games. Basketball was first played in Central America where, among the Mayans, it reached the importance of our Big League games. Rubber balls were also used first in Central America. The Spanish who had invaded Mexico were dumbfounded by this strangely acting ball. In a letter sent back to Spain the writer declared that, "They played with a ball filled with a strange substance said to be obtained from the sap of a native tree. But indeed it acted as if it were possessed of the devil. Upon being hit by one of the players, it went in a direction entirely different than that it seemed intended for."

LaCrosse is another original American Indian game. In its first state it was such a rough and tumble game that it is a wonder that enough of the players ever survived to teach it to others. A list of other American Indian games includes jumping rope, hide and seek, tag, tug of war, high jumping, kaiak (the skin boat of the Eskimo), racing and nearly all the games one sees played today whenever a group of boys gets together.

In all these games and toys of antiquity the only object was to provide pleasure and entertainment. They were given to children more or less as pacifiers or stop-gaps, so that they would play and leave the parents alone.

Today, toys aid in building better and healthier children. Froebel, Pestalozzi, Montessori and others have studied and developed the instinct of play as an aid in the child's education. How this newer knowledge of play and playthings may be applied in the nursery and home will be explained in detail in the second article of this series.

(To be concluded)



Naegeli, Gstaad

SCHOOL CHILDREN OF GSTAAD IN THE BERNESE OBERLAND, SWITZERLAND, ARE ON THEIR WAY TO A SKIING LESSON. THERE ARE NO TRUANTS HERE!

A HOCKEY MATCH IN THE ICE STADIUM AT ST. MORITZ IN SWITZERLAND ALWAYS ATTRACTS HUGE CROWDS OF SPECTATORS.

Steiner, St. Moritz

THE CRISP MOUNTAIN AIR OF SWITZERLAND AND THE GLORIOUS WINTER SNOW FIELDS INVITE MANY SPORT ENTHUSIASTS TO CAUX, ABOVE MONTREUX, WHERE BICYCLE SKIING IS A FAVORITE PASTIME.

LET'S BUILD A SNOW MAN!

Century-Allen

What Is a Mastoid?

By LOUIS T. CURRY

IT IS necessary to understand something about the structure of the skull, in order to answer the question, so often asked, What is a mastoid? Directly behind the lobe of the ear there is a bony prominence, the external surface of the mastoid bone. It begins to develop at about the age of 1 year. Babies do not have mastoids. Adults have a mastoid or a prominence on the skull at this point for the attachment of a large muscle that passes from the skull to the chest. Since this muscle is most important as a means of turning the head from side to side, it needs a firm union to the skull; this is accomplished by the enlarged bony hump called the mastoid.

When you inquire what a mastoid is you really wish to know more than the location of the mastoid bone. This question is usually asked when there is pain or swelling behind the ear or when some one has undergone an operation on the mastoid bone. The question should really be, What is mastoiditis? Mastoiditis is an inflammation of the mastoid bone. Inflammation of the mastoid does not begin on the outside but on the inside of the mastoid bone.

To understand how disease gets into the mastoid bone we must take an imaginary journey into the ear. Disease of the mastoid rarely takes place unless there is or has been disease of the ear. Disease of the ear in most instances arrives by way of the throat. The mastoid, the hump of bone behind the ear, is connected with that part of the throat behind the nose called the nasopharynx, or nose-throat. It can be readily understood how children with head colds may suffer an extension of the infection into this region. From this point the infection may travel through a little tube to the ear. Through the ear the cells in the mastoid may become involved. Other infections in the back of the nose that may cause ear disease are tonsillitis, enlarged adenoids and the infectious diseases such as influenza, measles and scarlet fever.

Imagine an enlarged model of an adult human ear, say 100 times the normal size. The outer ear is then about 14 feet high. The hole in the outer ear or canal is about 3 feet in diameter. Imagine that we crawl into this 3 foot tunnel. As we go inward, we go toward the ear drum 14 feet away. This tunnel is slightly S-shaped. For the first 7 feet the wall of the tunnel is soft because of its rubber-like substructure of cartilage, but the inner 7 feet has a hard wall of bone covered by a thin cushion of skin. As we approach the ear drum, we see it is a canvas-like structure dented in the center. It blocks the entire passageway. The dent in the center of the ear drum keeps the membrane tense. To inspect the middle ear suite we must make a large hole in the ear drum.

IMMEDIATELY inside the ear drum is a narrow room filled with the ear machinery, three little bones with their ligaments and muscles. This little room is only 4 feet long, 4 feet high and scarcely 2 feet wide at the top and the bottom. It is even more narrow in the middle. We squeeze into this little room and inspect the ceiling with a light. Most of the machinery is suspended from the ceiling. Toward the ceiling of this little room in the back wall is a hole about 1 foot in diameter. We crawl through this hole back into a sizable cave about 3 feet wide. This cave, representing the large cell or cavity of the mastoid bone, is called the antrum of the mastoid. This particular cavity is always present even in an infant. Below it are found many other larger and smaller cells or caves all intercommunicating. If we manage to squeeze through these cells to the bottom group and then chisel through their outer wall, we come out on the hump back of the ear. If the ear is one that has had ear disease over a long period of time, we are not likely to get out of this cave or antrum because previous infection of the lower cells has left them blocked up.

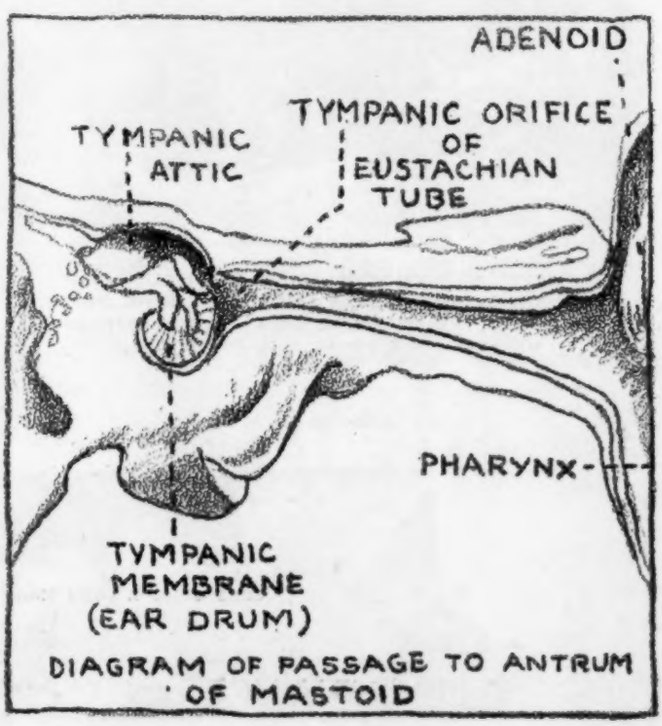


DIAGRAM OF PASSAGE TO ANTRUM OF MASTOID

Now let us return from this cave or antrum to the little room inside the ear drum by means of the window in the upper back wall. We discover another window high up in the front wall. Crawling through this opening, we go down a narrow passage, 12 feet long, which is especially narrow in the center. For the first 4 feet this wall is composed of hard bone substance while the last 8 feet comprises cushion-like cartilage. We peer out at the lower end of this long passage and find that we have arrived in the throat. Daylight is coming in through the two openings at the back of the nose and from the mouth below. The entrance of this channel from which we now look around remains closed except when the individual swallows or yawns. It is therefore easy to understand the feeling of pressure in the ears when yawning. Air rushes up this channel and strikes the ear drum.

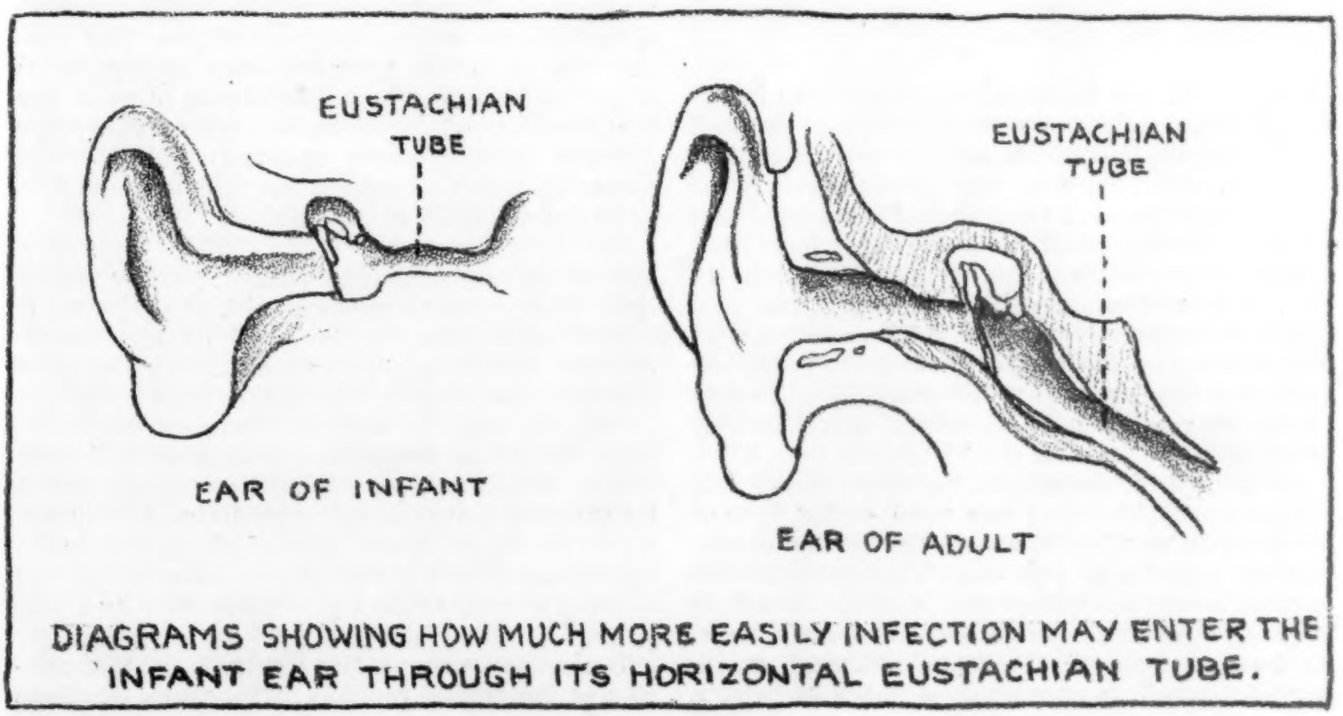
WE HAVE now traveled into the ear, through the ear drum, into the middle ear suite, back into the mastoid cells; we have returned to the middle ear cavity and then gone forward into the throat. The usual route taken by bacteria to the middle ear cavity is by way of the channel in the back of the throat behind the nose. Earache is caused by the swelling in the little room inside the ear drum, which results from infection. If this swelling or infection progresses the ear drum becomes red and bulges, and the individual does not hear well in the involved ear. The ear drum may rupture spontaneously, or it may be opened surgically. If this little inner chamber swells rapidly the infection is spread through the upper back window into the antrum or upper mastoid cell where it has access to the remaining cells. If the infection is severe enough or drainage through the ear drum is inadequate, tenderness, redness and swelling occur over the mastoid bone back of the ear. This is evidence of mastoiditis.

So it is clear that any earache or discharge in the ear is a potential forerunner of mastoiditis because the middle ear cavity and the mastoid cells are like the living room and hall.

I have purposely avoided an excursion into the inner ear where sound waves make contact with the nerve of hearing. Mastoiditis is related to this organ but is not caused by any disease of this organ.

TO SUMMARIZE this discussion, I make seven points:

1. The mastoid is the bony hump on the skull behind the ear.
2. In individuals who have not had ear disease the mastoid is filled with cells or bony pockets.
3. The mastoid cells are part of the middle ear structure. The other middle ear structures include the tube to the throat and the middle ear cavity inside the ear drum.
4. The tube, cavity and cells form a closed, connected system opening to the outside only in the throat and then only when the person is yawning or swallowing.
5. Mastoiditis is an inflammation of the mastoid cells and usually follows infection in the throat, which has started middle ear disease.
6. The seriousness of an infection of the mastoid arises from the fact that it lies close to important anatomic structures involving large blood vessels and to the brain cavity itself.
7. Unless mastoiditis is relieved by surgical measures at the proper time, it may extend to these anatomic structures and cause serious complications.



DIAGRAMS SHOWING HOW MUCH MORE EASILY INFECTION MAY ENTER THE INFANT EAR THROUGH ITS HORIZONTAL EUSTACHIAN TUBE.

VENEREAL DISEASE—

MASON GIESKE

There can be nothing but damage in hiding so appalling a menace (syphilis) behind the door. If any other infectious disease of comparable virulence were one-half so prevalent it would cause something approaching a panic.—H. L. MENCKEN *(The Baltimore Evening Sun,* Aug. 13, 1934).

OF THE six venereal diseases, those infections which are transmissible by and usually acquired as a result of sexual contacts, only syphilis and gonorrhea are of major importance to the infected individual and to the public health. Gonorrhea has been known since biblical times, was prevalent in ancient Rome, and received its appelation as a venereal disease by virtue of its association with the practice of the arts of Venus. Syphilis, on the other hand, seems to have appeared first in civilization following the return of Columbus' ships to Spain in 1493.

Of these two, syphilis is the more important, the more deadly, and has been called by Dr. William Osler "the greatest killer." The organism of syphilis, a pale staining, spiral-shaped germ known as Spirochaeta pallida, is easily visible to the human eye only through a dark-field microscope. At the site of inoculation with syphilis, which is usually on a moist or broken surface of the skin, after a period of time ranging between ten and ninety days there usually appears the first sign of infection, a lesion called a chancre. This lesion contains large numbers of spirochetes and is highly infectious. The person who is in this primary stage of syphilis is a real menace to others, continuing to be so for the duration of the chancre and of the other mucous lesions which generally follow it, a period of many months if the infected one does not receive suitable treatment.

AFTER the eruptions have healed, as they will in time even without medical aid, the disease is sealed up within the body of its host, occasionally breaking out with infectious mucous patches but often remaining a hidden danger to no one but its host in whom, years later, some serious or crippling evidence of its insidious work will develop. Syphilis is distinguished by the fact that it is an exquisitely chronic ailment, prone to attack any organ in the body. Spontaneous cure is rare; more often the disease is fatal, though death follows infection by many years.

Gonorrhea, a contagious catarrhal inflammation of the genital mucous membranes, develops

THE MODERN PLAGUE

EARLY AND ADEQUATE TREATMENT OFFERS THE PATIENT PROTECTION FROM LATER BECOMING AN INDIGENT, BEDRIDDEN OBJECT OF CHARITY.

in a new victim within a few days. It is caused by the gonococcus which, when seen under the microscope, resembles a coffee bean. This disease is relatively acute. Its course is painful, requiring daily attention from a physician before it yields to treatment. Untreated, it may limit itself and become spontaneously cured within two years; or it may cause serious late complications both to men and to women, though rarely does it kill. Since its activity is confined in most instances to the genito-urinary tract it is infectious to others as long as it exists. After a cure has been established the disease may be acquired again. Because gonorrhea is popularly considered less serious than syphilis and "no worse than a bad cold," the majority of infected persons do not seek medical advice and treatment, preferring to "let it cure itself," with the result that thousands of misinformed individuals are sufferers from ills that might have been prevented with timely professional care.

In 1930 a committee of representative Baltimore physicians and the Baltimore City Medical Society requested the American Social Hygiene Association and the United States Public Health Service to make a survey of Baltimore as an average American city to find out how many cases of venereal disease existed and what the incidence of fresh infections might be. The date selected for the prevalence survey was June 15, 1930. The one-month period for determining the incidence, or the number of infected persons reporting for treatment for the first time for their venereal disease, was from May 15 to June 15, 1930.

It was found during this period that 10,707 cases of venereal disease were reported under treatment or observation. Of these, 72 per cent were in the hands of public clinics, institutions or hospitals, and 28 per cent were under the care of private physicians. In the cases reported, 7,462 patients were suffering from syphilis and 3,245 from gonorrhea. It is not to be understood that all the syphilitic patients were in the infectious stage of the disease, since this is not true. Of the 7,462 cases of syphilis, only 1,393 were classed as early syphilis and therefore a menace to others. The remainder had probably passed the stage of infectiousness, except in the case of women who were potential mothers of unborn children.

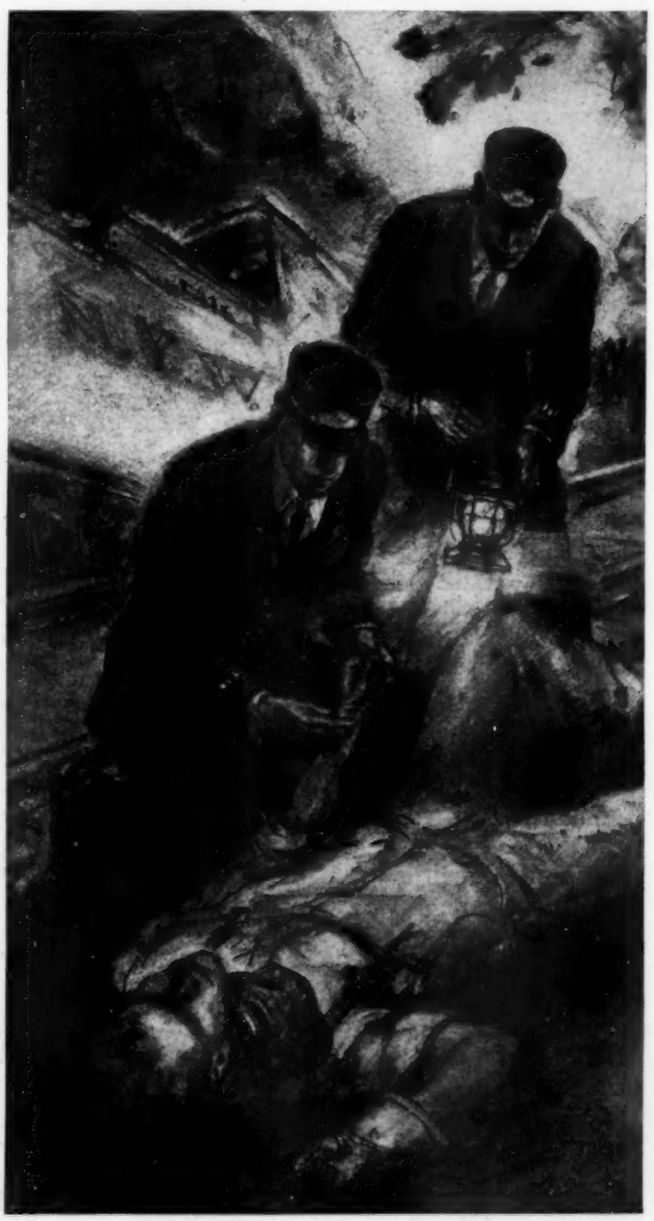
Contributing factors to the spread of venereal disease are many. The first of these today is laid to the economic depression and its attending unemployment. The unrest and uncertainty that exist aggravate the conditions which social hygiene associations and public health authorities seek to alleviate. Heads of families are forced to leave home to gain employment; women also must leave their families to find work, and this results in the neglect of children. Young persons, whose ideas of life are now in the formative stage, are free to go about to drinking parties and midnight brawls and indulge in all manner of unrestricted pleasure-seeking. The massing of large numbers of men in employment camps and other congested areas, often without proper medical or other supervision, creates a "boom town" situation where commercialized vice is present and disease spreads rapidly.

THE second great factor responsible for the spread of venereal disease is ignorance. People consider it impolite to mention the words syphilis and gonorrhea, and the average parent does not wish his children to be instructed on these subjects. Consequently, when a boy or girl is unfortunate enough to acquire one or the other disease, it is unthinkable to appeal for financial aid or advice to the parents. Uninformed young people may not even know that they have been infected, since they have never been warned against the dangers or symptoms of the venereal diseases, having been taught to believe that "nice people" never have them. Few know that syphilis may be acquired by kissing or by drinking out of a common glass. Ignorance is not confined to young people; many adults consider it an insult if a physician suggests the making of a blood test in order to clarify the diagnosis of an obscure ailment.

The taboo on the use of the words syphilis and gonorrhea in the public press has retarded progress. Less than twenty years ago, when the late President Eliot of Harvard gave an address in which he merely mentioned these words, a most reputable paper in Boston deleted all reference to his entire speech. It is not surprising, therefore, that in 1930 the newspapers in New York were reluctant to inform their readers of a general campaign on the same subject. Reporters attended meetings of the Bellevue-Yorkville Health Administration and wrote their stories; but nothing appeared next day in the papers. Not until August 1934 did the word syphilis appear in the Baltimore *Evening Sun*, and then it was contained in the uncensored column of the fearless Mr. Mencken.

While a few groups are approaching the problem with open minds it is still impossible to gain full cooperation between public health officials and private physicians because of the moral issue involved. Many taxpayers feel that their money should not be spent on clinics for venereal diseases since they believe that the infected ones deserve to "suffer for their sins." The family physician hesitates to make a report to the health department, though it is often required, because this slight publicity would reflect on the morals of his patient. Campaigns are organized regularly to fight tuberculosis, diphtheria and other infectious diseases, and the cooperation of every citizen is openly requested. So far, many city health departments have feared to broach the subject of venereal disease in so frank and candid a manner. Until this is done the public will remain ignorant of the menace to their health and happiness, and funds with which to fight the spread of these diseases will be lacking.

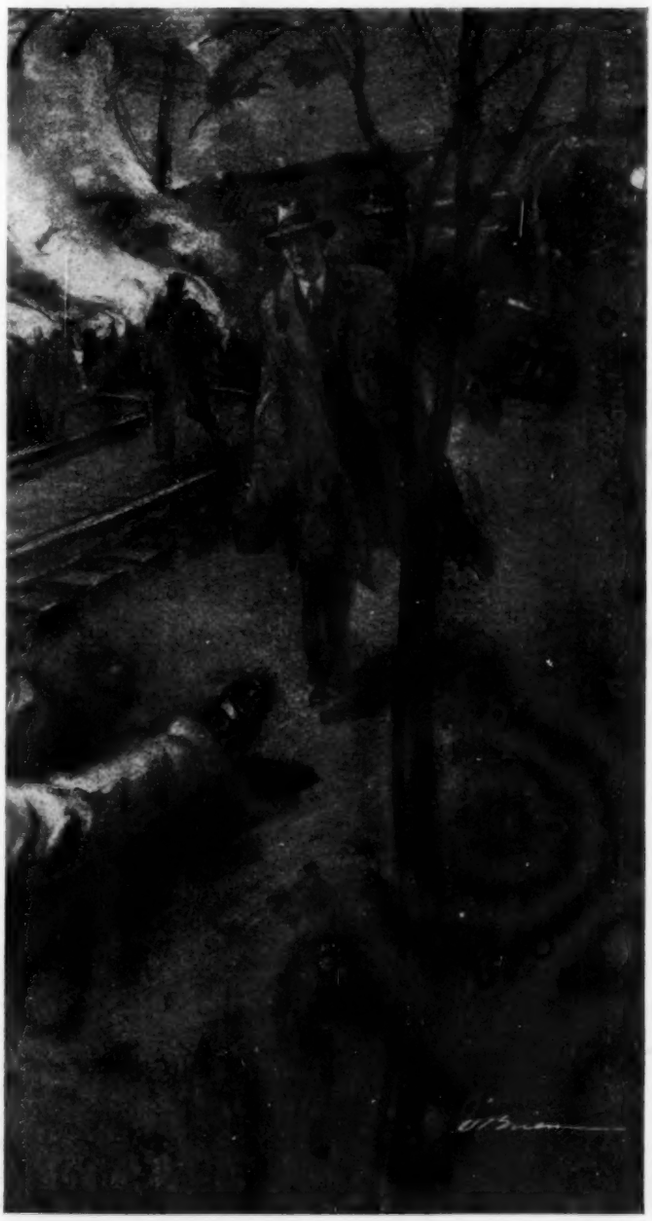
According to the *Social Hygiene Bulletin*, "What the public needs to know particularly



THE LOCOMOTIVE ENGINEER EXPLAINED THAT ONE OF HIS

is that syphilis and gonorrhea are not punishments for crime and sin; that they are caused by disease germs which live and die in accordance with known biological laws, and spread from infected to susceptible persons in any community by methods fully understood and combatable. It is important for public welfare that people should recognize that these—the so-called venereal diseases—are kept alive by a series of separate localized outbreaks, rather than by continuous centers of infection in any community. This being the fact, it follows that in the case of syphilis, as in tuberculosis, tactful sympathetic investigation to discover and treat those involved in each outbreak is necessary and of great value to families and to the community as a whole."

Every one who contracts either syphilis or gonorrhea should know the importance of adequate treatment and the dangers that lie in store for him if he neglects it or does not take any treatment whatever. He may go along for months or years without any visible sign of illness; but at some future date serious heart trouble is likely to develop, or he may become blind or deaf, have a paralytic stroke or locomotor ataxia, or even go insane. These are a few of the late developments of syphilis.



"SPELLS" HAD COME ON HIM AND HE HAD RUN BY A SIDING.

If any of these things happen to him his family is bound to suffer economically. He will require medical and hospital care, and his treatment at this stage of the disease will be expensive and prolonged if further crippling lesions and progression are to be prevented. If he is able to work at all it is with lessened vigor and with greater effort; if he is too incapacitated for work he is a heavy burden on his family.

When a patient in a late stage of syphilis, having had little or no early treatment, enters a private office or a public clinic it is probable that his family has been unaware of his condition during the years that he has gradually been growing worse. It then becomes necessary to examine the marital partner and the children if there are any. In many instances the wife also is found to be infected, and this places an additional financial burden on the family resources.

As I have already stated, the majority of patients under treatment in public clinics are in the chronic or late stages of syphilis and gonorrhea. These people are not the public menace that they were in the early stage of their disease, but they must be treated or they will eventually become public charges, as have thousands of others who did not receive proper medical care and are now inmates of state hospitals or invalids dependent on the city charities. Early and adequate treatment for either disease makes the patient noninfectious to others and offers him protection from later becoming an indigent, bedridden object of charity.

SYPHILIS and gonorrhea cost employers millions of dollars a year in compensation relief and medical attention, especially in cases characterized by delayed convalescence and prolonged disability, plus the difficulties of labor turnover and temporary substitute employees, and the decreased efficiency or even accident-producing illness of the workmen. A locomotive engineer who was responsible for a bad wreck explained that one of his "spells" had come on him and he had run by a siding. Examination showed that he was suffering from dementia paralytica, softening of the brain due to syphilis, which might have been prevented had treatment been given in time.

The difficulties encountered in giving treatment to syphilitic patients are numerous. After the diagnosis has been established the honest physician has a talk with his patient about the

probable cost of treatment. Even in cases of early syphilis it is imperative that treatment be continued at weekly intervals for from a year to fifteen months; in late syphilis three or more years may be necessary. Antisyphilitic drugs are expensive, and if the patient feels unable to pay even the minimum fees of private practice he must be sent to a free or semifree clinic.

In cases in which cost of treatment is the main consideration a patient has two alternatives: If his circumstances of comparative indigence warrant it, he may go to a large clinic where treatment is free; otherwise he must go to a private office.

WHILE the actual cost of the venereal diseases to the community, whether through taxpayers or through privately endowed charities, is unknown, for a city the size of Baltimore it is estimated at a million dollars a year. This staggering sum of money is unintelligently expended, since only a tiny fraction of it goes for the early treatment of these diseases at a time when their infectiousness can be reduced or abolished and the patient can be cured. The greater proportion of the sum allotted for care of the indigent sick goes to hospitals, insane asylums or the charitable care of patients with late complications who, since they are not now infectious, are no longer a menace to the community and who, in many instances, are themselves incurable. Three remedies are suggested:

First, better training of medical students and physicians would enable them to recognize syphilis; gonorrhea presents no great problem of diagnosis since it is mainly a local disease. They should be able and ready to make a thorough physical examination and to have a Wassermann test performed if a questionable lesion is present anywhere on the body.

Second, dissemination of knowledge regarding the venereal diseases must be carried on by means of newspapers, magazines and radio. In this way, persons who are reluctant to seek the information will absorb it, applying it to their own needs if and when the occasion arises. The menace which is present in every community will be no longer behind the door but out in the open where it can be dealt with intelligently.

Third, the public health officials must give more attention to the problem of venereal disease and in their contacts with the public must attempt to educate them to a point of acceptance of the situation, enlisting their support in dealing with it. Greater cooperation between public health authorities and the medical profession would aid in the discovery of fresh cases which might be treated before they have had opportunity to spread infection to others.

Men and Women Do not Grow into Adult Success out of Childish Unsuccess. The Child Is in Very Truth Father to the Man.

—Aida de Costa Breckenridge.

Forecast for February

In "The Privileges of Parenthood," *Evelyn M. Carrington* points out that "home should be more than a place where the family goes to sleep and to eat. It should be the place where life, in the largest sense, is begun; where courage and strength are engendered; where understanding of the cultural and practical is promoted, and where personalities and attitudes are evolved."

"Half the fear of heart trouble in children," writes *Dr. Louis Faugeres Bishop Jr.*, "is caused by the worrying and loving parent." In an encouraging article, Dr. Bishop pleads for a sane attitude on the part of parent and child, and points the way to a happy medium of activity for the child who has heart disease.

Because of the frequency of hernia, quacks and charlatans often seek to take advantage of the too trusting sufferer. Therefore *Dr. Frederic Hagler* contributes an article in which he explains the structure, cause, signs, types, dangers and treatment of hernia, or rupture.

"Eternal vigilance is the price of greater safety on the part of every one connected with industrial occupations." This warning is sounded by *Rose Henderson* in an article in which she discusses the value of goggles and other devices for saving eyesight in industry. "Strangely enough," she writes, "workmen find all sorts of excuses for not wearing goggles and usually prefer to take the risk of losing an eye or two. Yet goggles save sight and money."

Despite years of experience with that menace, smallpox, the world still suffers under the toll which the disease takes. "If vaccination were made compulsory and were rigidly enforced," writes *Prof. Louis Gershenfeld*, "smallpox would be unknown. It exists in this world because of the unvaccinated, who are a detriment not only to themselves but to every one in the community." The fight against smallpox is described, and the symptoms, treatment and transmission of the disease are outlined.

Geography Lesson

By BEATRICE CREIGHTON

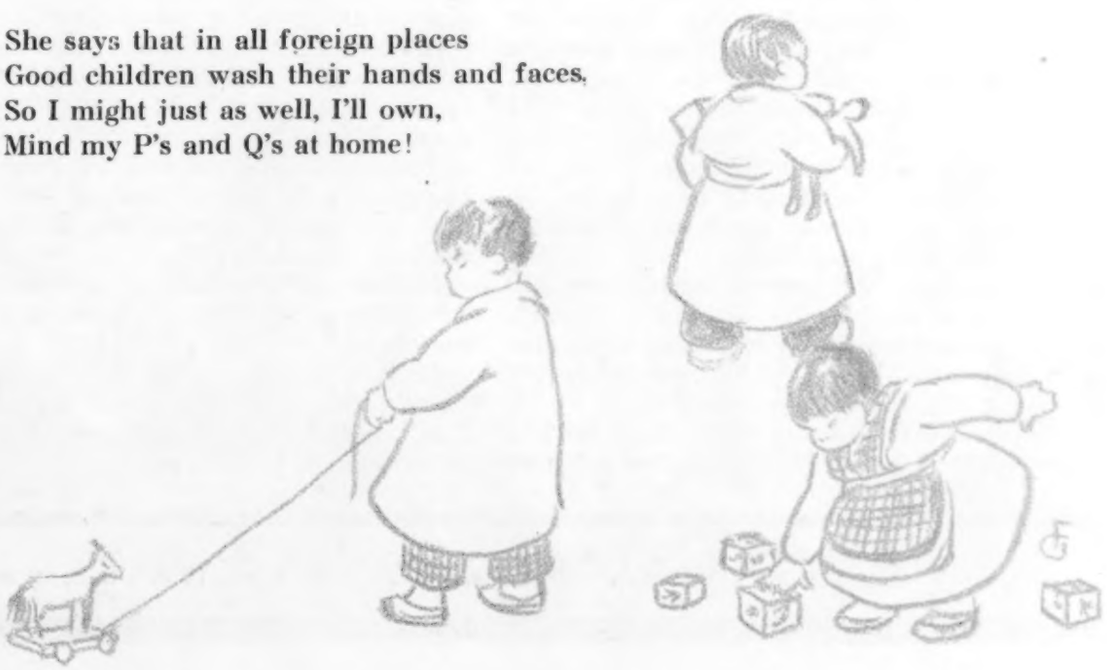
My mother said no matter where
I'd travel to, by train or air—
In any country that I'd choose
I'd have to mind my P's and Q's!

I'd have to, if I lived in Spain
Wear my rubbers in the rain;
Or, if I went to Mex-i-co
"No, my dear," would still mean "NO."

Small children don't, in Paris, France,
Under any cir-cum-stance
Play in gardens after dark,
Or lose their nurses in the park.

And Swedish mothers proudly state
Their children are in bed by eight;
While little Chinese girls and boys
Have to put away their toys.

She says that in all foreign places
Good children wash their hands and faces.
So I might just as well, I'll own,
Mind my P's and Q's at home!



Too Much Solicitude

I ASKED my half grown daughter not long ago what were some of her happiest memories, and she answered promptly, "Being sick. You made it so perfectly swell, Mother, to stay in bed!"

I know I did, and now I realize it was a serious mistake. I was one of those overanxious mothers who translate half a degree of fever into a sign of a dangerous visitation. I was all solicitude. I put the child to bed at the slightest provocation. I took temperatures repeatedly. I rearranged the nursery furniture in hospital fashion; all superfluous articles were tucked away, and curtains were lowered. The entire household centered on that room and that one child. Every wish was anticipated; the most tempting trays were presented, and I developed a bedside technic of amusing my young patients that was, in all modesty, outstanding.

I must have been blind, however, not to have read the significance in the wistful gaze with which the well child would regard the one in bed; or to have failed to note how frequently I would hear, "I don't feel very well myself, Mother." Another patient would then be added to my hospital and be settled down in contented comfort in the other twin bed, giving the approved ward effect that was considered especially delightful.

I know I was a good nurse. I made them comfortable—but too comfortable. The rôle of patient was too attractive. In our household, as my daughter said, it was "swell" to be sick. Indisposition was also, I realize now, a tempting escape from unpleasant issues such as examinations, poorly prepared music lessons or unattractive social obligations. Undue concern for my children's health made me exaggerate the possibilities of the least indisposition. As a result both children were inculcated with a feeling of the immense importance of the slightest deviation from the perfect health line. A slight cold, a raw throat or a cut might be freighted with dire possibilities.

Now, at college age, they naturally are still inclined to roll back the years at the slightest symptom and surrender to the nursery regimen of a "swell time" with all its accompanying privileges. Who can blame them?

This was no way to prepare children for life. To carry on perhaps with a headache, a tender throat or an absence of zest is, as every one knows, an obligation all adults have to meet. Unconsciously I did all I could to make my children evade this obligation and surrender at the slightest provocation.

With considerable chagrin I now recall my mental criticism of a friend whose technic with her ailing children I piously denounced as heartless and cruel. In her rather large family a child who acted sufficiently "under the weather" to be kept from his daily activities was put to bed in his own room and left strictly alone. The door was closed, and the household did not noticeably alter its procedure to accommodate the invalid. Meals came up on a tray; occasionally the patient was visited, but for the greater part of the time he was left to himself.

It always surprised me how promptly my friend's children recovered and how little school they missed. Their memories are doubtless not like those of my children, who recall pleasant orgies of attention and limelight, not times so dull and stupid that they were made as short as possible and were indulged in only when absolutely necessary. The character developed in consequence of this practice is what gives me food for thought.

My children undoubtedly treasure their pleasant memories: the eager-to-please mother reading aloud by the hour or fabricating stories; the tempting trays, and the sensation of being the center of watchful, indulgent attention. Is it any wonder that now, when they are almost grown, at the first symptom of discomfort they give up and await a "swell time"?

If I could live over those years, how different my attitude would be! I would err if anything on the Spartan side in treatment of the children's illnesses. I would try to inculcate a spirit of endurance in them and minimize rather than exaggerate the significance of their discomfort, and I certainly would not display my inner anxiety and concern!

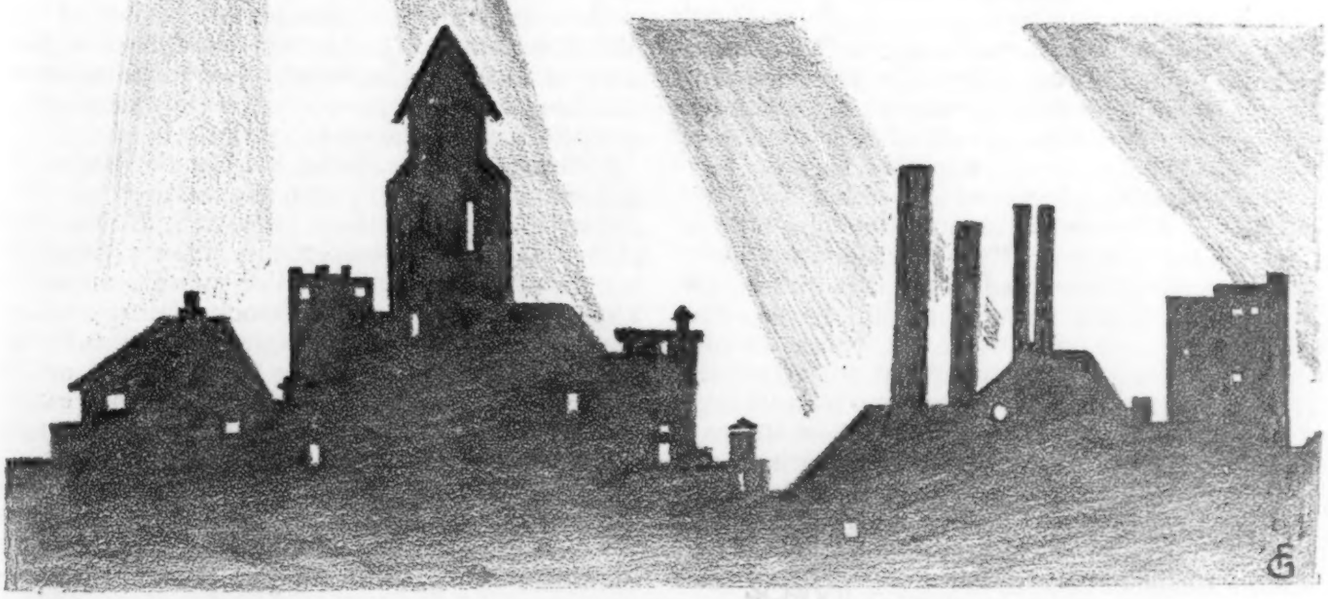
Perhaps my children's memories would be less happy, but that after all is a nearsighted and weak criterion by which to guide one's actions. To prepare a child for adult life is a parent's big job. Too much solicitude and too tender nursing are poor means of accomplishing that end.

By BARBARA McALVAY ROSEWATER

Night Nurse on Duty

Another life slips through the casement bars
To wing its way up toward yon silent stars.
(Be still, my heart, heed not these hurts and fears;
Your strength must ne'er give way to weary tears.
And, hands, be gentle as you lift this one,
His daddy called him "Dear, my only son!")
Oh, stifled laughter veiled in pain and grief—
Dear God, please guide me while I bring relief!
A light in number four—new mothers there,
Wee cries from nursery cradles for my care.
That girl in number six seems sad tonight—
I wonder why they all can't be all right?
The world looks lonesome out across the snow
With town lights twinkling at it row on row,
The telephone—"Emergency, you say?
Yes, Doctor, I'll be ready. We expected her today."

By FAE DECKER DIX



Puberty and

Physiologic and Psychologic Phases of the Adolescent Age

H. Armstrong Roberts

NO OTHER epoch in the cycle of human life presents as many rapid, successive and profound physiologic changes as those found during the time of sexual maturity of the boy and girl. Infancy and childhood are concerned with the building up of the bodily processes of the organism as an individual. Puberty marks the beginning of preparation for the individual to carry out a natural function of all living beings, the perpetuation of the race. Puberty may thus be defined as the period of sexual ripening, following which the sperm cell of the male and the egg cell of the female are rendered capable of reproduction.

The physiologic burdens associated with this period of deep-seated change have been little appreciated until recently. The Romans viewed puberty, which occurred at approximately the age of 15, as the period for military service. Among the orthodox Jews, 13 years is considered the age of maturity; at this time the adolescent assumes religious responsibility through the ceremony known as *Bar Mitzvah*. Economically speaking, the youngster in many manufacturing communities is allowed "working papers" so that he may be gainfully employed. One must not overlook the custom among the so-called "better classes" that allows adolescent high school children to organize into clubs or sororities for strenuous social activities, a custom which has little reason and no justification in the light of the present knowledge concerning the complicated maturing processes.

AT THE other extreme are the overanxious parents who interpret every unpleasant incident in their child's life at this period as part of his "development." This article is written in the hope of dispelling some of the erroneous ideas on the maturing phenomenon by presenting accepted knowledge on the process.

Different racial stocks as a rule begin to mature at different ages, depending on the native climate. It has been found that the higher the mean temperature of the original habitat of the race, the earlier puberty appears. Thus children of southern stock mature earlier than those of northern origin. The ages vary from 10 or 11 years in the former to 16 or 18 in the latter group. Individual variations exist, as would be expected. Girls begin to mature earlier than boys.

The personality of the child is a great factor in the ripening time. As a rule the sanguine, active, irritable type of child matures earlier than the slow, phlegmatic type. Physical

in Fact Fantasy

By HERMAN M. JAHR

H. Armstrong Roberts

make-up also plays a part. Children who are large and strong begin earlier than their smaller and weaker fellows.

Social conditions often determine the age of sexual maturity. Children in an unfavorable environment, who are subjected to undue stimulation in such matters as conversation and unwholesome reading, reach puberty earlier than children in favorable surroundings.

As will be seen later in the discussion the demands of the organism during this period are so great that unless adequate food, fresh air and sunshine are properly supplied the maturing process is naturally delayed and prolonged.

PUBERTY implies the ripening of the sexual function in the individual boy or girl. It is the earliest stage of life at which the female and male, respectively, are capable of reproduction. It must be remembered, however, that this represents only one phase of approaching general maturity. The sex glands are a link in a complicated chain known as the endocrine glands, all of which, through their secretions, or hormones, are interdependent in their effects on one another, and each of which in its individual and collective rôles contributes to the maturing of the host. Puberty does not represent a sudden acquisition of these glandular attributes; rather is it the expression of an acceleration of activities of these organs, as may be judged from their rich blood supplies, which appear rapidly during this period.

THE accelerated growth of the sex glands is accompanied by increased secretion of all other glands which form the endocrine system, with the result that general growth of the body becomes rapid. Not only is there development of the reproductive organs, but at this time the outward or secondary characteristics of the two sexes become more clearly defined. The childish figure begins to disappear. The female sex hormones in circulating through the body via the blood supply stimulate certain portions of the body, particularly the breasts, to enlargement. In order to prepare themselves for their ultimate function of nourishing the offspring, the breasts accumulate fat and other tissue deposits, and gradually small ducts make their appearance. Hair appears in the axilla and over the pubic region, the ova ripen in the ovaries (graafian follicles), and through the fallopian tubes are periodically discharged into the uterus, there setting up stimulation and congestion of the inner lining with resulting bleed-

ing, or menstruation, and discharge of the ova and uterine débris, a purification process that renders the organ receptive to the next period of ovulation.

The male sex hormones, which are elaborated by the glands and absorbed by the circulating blood, are carried to the tissues and there produce characteristics denoted as masculinity. Hair appears on the face, in the armpit, in the lower part of the abdomen and on the chest.

Along with the primary evidence of outward sex manifestations the other factors involved must be considered. It was stated before that the genital glands are a link in a chain including many other glands whose secretions affect and are reciprocally affected by these sex glands. Scientists are well acquainted with some of these secretions. Their ways are understood, and a fair knowledge of their functions has been established. Thanks to recent clinical and experimental investigations, if the case demands it the insufficiency or lack of certain hormones can be detected, and the hormone necessary to maintain the efficiency of the chain can even be supplied. Thyroid, pituitary or ovarian extracts, for example, may be needed. Other links are not so well known although recent studies are gradually elucidating their functions. Suffice it to say that during the time of puberty all these glands are exceedingly active and their secretions afford a tremendous increase in the rate of growth of every part of the body.

To keep up the pace of the rapid changes in growth the body must increase its food intake, and in order to utilize this added intake it must increase correspondingly its oxygen supply. As a consequence the chest increases in depth and width to allow a greater lung capacity. At this time the youngster's appetite is almost alarming. It is at this period too that parents often become suddenly aware of the increase in height and the broadening of the chest and shoulders of their children.

The muscle development is of particular interest. The youngster is scarcely able to adjust himself to this sudden growth, judging from the awkwardness in his gait and oversensitiveness in his carriage. He literally does not know what to do with his arms and hands. To this dilemma must be added the sudden growth of the larynx or voice box and the resulting embarrassment of "voice breaking," especially in boys. As a rule a girl's voice "breaks" only in singing. It is of interest too that while earlier in childhood the rate of growth of the heart muscle is between 6 and 7 per cent annually, during puberty the rate is increased to 15 or 20 per cent.

In the light of such deep-seated and complicated changes it is only natural that perfectly regulated though the mechanism may be, even in the healthy child an occasional complaint may be expected. Certain mild physical disturbances, such as shortness of breath and dizziness, are so prevalent that unless they are persistent and unduly annoying they may be considered normal accompaniments of maturation. They are due to the changing rate of the circulation. Probably the most frequent and yet the most discomforting complaint is a sense of fulness, occasionally with pain, in the lower part of the abdomen and in the small of the back. This is due to congestion in and around the sex glands, particularly among girls, and in the latter it is especially pronounced before the menstrual flow begins. Twinging pains, sometimes pricking, occur occasionally around the ribs and breasts, particularly in girls.

It is doubtful that the mentality is affected by the maturing process, although in several cases it has been found that the mentality is accelerated along with other processes. Theoretically it is conceivable that the increased hormone output may stimulate thinking and reasoning, but actually there is little evidence that this is true.

Emotionally, however, there is a definite change when puberty is reached. The two sexes again drift far apart in their reactions. The young woman displays great solicitude for younger children, a manifestation of the maternal instinct. The youth shows his domineering disposition by teasing his younger fellows and bullying the weaker ones. The girl becomes more attached to her parents, while the boy manifests a spirit of independence, at times a hostility to his elders. The boy becomes imbued with a sense of great importance and is inclined to show arrogance toward his teacher, while his sister is more likely at this period to have a "crush" on her instructor.

Both sexes show a great deal of emotional restlessness, depression often alternating with hilarity. Both appear clumsy, clownish and awkward. And why not? They are leaving the protected age of childhood for the doubtfulness of youth—

"Standing with reluctant feet
Where the brook and river meet."

BUDGETING the RESERVE STRENGTH of the HEART

Part II

By FRANK T. FULTON

WHAT lessons may be learned from the foregoing study? No one likes to be reminded that he is growing old; in fact it is a fine thing to keep the spirit of youth. This we sometimes see in individuals in whom the physical infirmities of age are extreme, a proof that physical prowess is not necessary to maintain one's interest in all phases of life. However, it is wise to use all precautions to safeguard the body during the advancing years so that one's bodily health as well as the youthful spirit may be maintained as long as possible. It is a wise practice after 50 years of age to go at least once a year to the family physician and say to him that you want a thorough physical examination and that you want the best advice possible as to how to live in a sensible, practical sort of way in order to preserve this important organ both anatomically and functionally, so that your health may be such that you may live comfortably and be of the greatest satisfaction to yourself, your family and your friends.

It is not always wise to ask for all the details of the actual result of the examination, as for example, to insist on knowing the figures which are commonly used in expressing the blood pressure. Blood pressure has come to be a great bugaboo. Many persons like to have this expressed to them in figures. That, in my opinion, is a serious mistake, for the individual himself is entirely incapable of drawing correct conclusions. It is far better to accept the statement from the physician as to whether or not the blood pressure is elevated. Measuring the blood pressure in figures is a comparatively recent procedure, and it is only lately that even medical men have understood that an individual with high blood pressure may live in comfort and carry on moderate activity over a period of many years. When the individual himself knows his blood pressure in figures he is likely to discuss it with some of his friends at the club and get an opinion from one who knows nothing about it that will be extremely disturbing and discouraging.

Seldom have I known a man who was more unhappy than one who had been told that he had high blood pressure. He became obsessed by the one idea that he must himself know from time to time the changes of his blood pressure in figures, not realizing that most of the changes had no real significance. After a complete examination the patient would say, "Take my blood pressure again and see what it is now." He at one time asked his masseur to bring an instrument with him to take the blood pressure in order that he might know whether or not he was being told the truth about it. Had he been willing to place full confidence in his physician, follow his advice instead of trying to follow his blood pressure observations and be guided by his own opinion, he would have been far happier and would probably have lived longer.

If one is not in the habit of going periodically for an examination, on the appearance of any symptoms which suggest a failing heart, such as breathlessness on moderate effort or discomfort in the chest, one should unquestionably consult a physician and follow his advice. Not uncommonly, people who are in their fifties insist on playing tennis, climbing mountains and carrying on other strenuous exercise. They should find out whether or not that is advisable, and follow the physician's advice. It often happens that men who have been exceedingly active are reluctant to modify their usual habits of exercise. They insist that they are able to do just as much in their fifties as they were in their thirties. This is foolish boasting and does not tend toward longevity.

MANY persons nowadays are overweight. If one gets reliable advice and is advised to reduce, one should do so. It is not a simple matter, but weight reduction can be carried out successfully by any one who will take it seriously. Fat people usually claim to be small eaters. This is sometimes true; more often it is not, although they may be honest in thinking so. In any case as long as a healthy person is putting on weight he is eating more than he needs; and an excess weight of 20, 40, 60 or more pounds simply means that the heart has to put forth much more energy than would otherwise be necessary. This is all waste energy, and a fat person puts a burden on the heart which in the course of years is bound to have an undesirable effect.

Moderate overweight before the age of 40 is not of serious consequence if the heart is normal, but after that age continued overweight does diminish one's expectation of life. Life insurance companies realize this and consider persons who are overweight as undesirable risks. An individual who is overweight and who becomes breathless on effort will usually find after reduction of from 10 to 20 or more

pounds that breathlessness will disappear. In cases in which there is any evidence of failing heart reserve such as is manifested by breathlessness or by discomfort in the chest one should avoid under all circumstances putting forth undue effort. Here again, pride comes into action. There may be an automobile tire to be changed; there may be a piece of furniture to be moved or lifted, or there may be a heavy bag or suitcase to be carried. All these things may be avoided. They may all be delegated. If, bearing in mind that strain of the heart muscle may be a damage which can never be repaired, one avoids overexertion one may often save oneself a long period of enforced rest and perhaps some years of life. The idea that is expressed in the old adage "A stitch in time saves nine" is never more true than in connection with cardiac damage.

If by chance one suffers the more serious accident of having one of the coronary arteries blocked by the formation of a clot, so that the circulation of a portion of the heart muscle is temporarily cut off, one is faced by a difficult problem. The reserve strength may now have reached the zero point. In order that healing may take place, absolute rest in bed over a long period is imperative.

The tact and skill of the physician will be tested to the utmost, and the patient and his family should give him a free hand and the fullest cooperation. It is common for members of the family to plead with the doctor not to tell the patient that he has any trouble with his heart, lest it frighten him. Death seldom occurs as the result of fright, but it often does occur as the result of an injudicious act. At any rate it is quite impossible to deceive a sensible person in that way and have him submit to the proper treatment. The shutting off of an artery in the heart is likely to be painful at the onset. The pain, however, may disappear within a day or two, and within a week the patient may feel as well as ever; but the repair that takes place in a heart damaged in this manner is by a process of healing carried on by nature which requires weeks and can be well likened to the healing of a broken bone. No one would think of getting up and going about with a broken hip or a broken thigh until after many weeks of healing had taken place. The heart, of course, is far more important than any broken bone and should have the utmost consideration, and unless the patient has a clear understanding of what his trouble is he will soon protest about the prolonged rest in bed. The pain may soon disappear; the sense of well being may become established, and if the patient has been told that his trouble is not serious, he is likely to rebel against the precautions and take matters into his own hands. The usual result is that he will have a recurrence of his symptoms with increased damage to the heart, perhaps with fatal result.

Many patients having had such an accident do recover and carry on comfortably for years. This accident often occurs as the result of some injudicious effort. For example, a patient of 60 who had had some cardiac pain at intervals

"YOU ARE OLD, FATHER WILLIAM,"
THE YOUNG MAN SAID,
"AND YOUR HAIR HAS BECOME VERY WHITE;
AND YET YOU INCESSANTLY
STAND ON YOUR HEAD—
DO YOU THINK, AT YOUR AGE, IT IS RIGHT?"

for two or three years previously and who had been advised against overeffort, one day left his office to get his motor and go home. It happened to be raining, and he hurried to get out of the rain. He was driving his own car. Before he arrived at his home, a mile away, he began to have a severe pain in his chest. He got out to open the garage doors, which opened with a good deal of difficulty. This increased his distress. Within an hour he was suffering such excruciating pain that he called his physician, who sent him to bed, where he remained for two weeks but failed to recover. A young man with normal reserve could have done this with comfort. This man promptly exceeded his reserve, and his heart failed. This illustrates how serious a mistake can be made by the man who relies on his sense of well being rather than on his physician's advice. In such a case the man's life is in his own hands. One sees many such instances of carelessness in regard to effort which result in a fatal heart attack and which seem so unnecessary.

The realization that the time is approaching when life must come to an end is often accompanied by resentment. That does no good. Every one who is fortunate enough to live beyond the sixth decade should strive to "grow old gracefully." It is so much better to develop a philosophy of living which includes a routine consistent with the natural limitations than to be continually making vain protests. Only by doing this may one acquire the placid temperament and loveliness of character which are especially charming in one who is growing old.

I have emphasized chiefly the effect of exercise and the advantage of its limitation as the reserve strength of the heart decreases. An important adjunct is systematic and periodic rest. An hour in the middle of the day spent in sleeping or in complete physical relaxation is a tremendous help in avoiding fatigue and in increasing efficiency. One might profitably imitate the custom of the French, who close up shop for two hours at noontime, though much of that time should be spent in resting rather than in eating.

As to the effects of overeating, the normal digestive processes put some added burden on the heart, and during digestion its action is always accelerated to some degree. If one eats rapidly or eats an excessive amount the stomach easily becomes overfilled. Because of the proximity of the stomach to the heart the fulness alone may embarrass the heart's action when the heart reserve is low. There is usually increased breathlessness after eating a full meal, and the frequency with which sudden death has been attributed to acute indigestion bears testimony to the danger of overloading the stomach when the heart reserve is low.

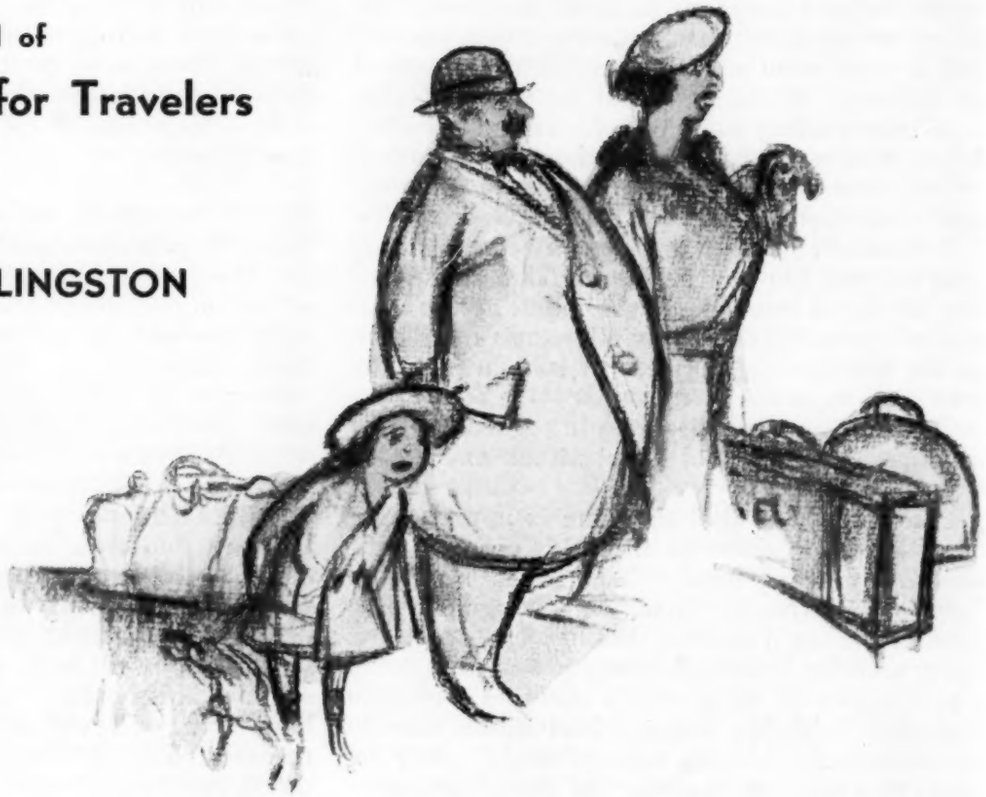
As a person nears the period when physical limitations begin to be manifest he should have some definite plan of living which will tend to keep him well within the limits of his heart reserve. The details of such a plan must be developed by each person for himself. One may aim for an ideal. Not all will be able to carry that ideal to its perfection.

"YOU ARE OLD," SAID THE YOUTH,
"AS I MENTIONED BEFORE,
AND HAVE GROWN MOST UNCOMMONLY FAT;
YET YOU TURNED A BACK-SOMERSAULT
IN AT THE DOOR—
PRAY, WHAT IS THE REASON OF THAT?"

THE TRAVELER'S CLOTHING

Part II of
Health Hints for Travelers

By
CLAUDE LILLINGSTON



LODGINGS SHOULD BE CHOSEN WITH SCRUPULOUS CARE. IT IS AS EASY AS IT IS STUPID TO WALK INTO A BEAUTIFUL VINE CLAD COTTAGE AND TO ARRANGE WITH ITS OCCUPANTS THAT THEY SHALL LODGE THE ENTIRE FAMILY FOR THE HOLIDAYS. PERHAPS SOME MEMBER OF THE COTTAGER'S FAMILY MAY BE SUFFERING FROM OPEN INFECTIOUS TUBERCULOSIS OR FROM SOME OTHER DISEASE.

THE LATE Judge Barton Payne, chairman of the American Red Cross, an observant and much traveled man, used to preach and practice the principle, "Trust the native!" This rule is particularly useful, with reservations, in the case of food; but it is also applicable, again with reservations, to clothing. The fur clad Eskimo and the unclad natives of the tropics are perhaps extreme examples, but they give more than a hint in sartorial fashions to the traveler in foreign parts. It would be absurd to generalize dogmatically about a problem in which national, individual and even sex differences are so pronounced. The natives of some countries wear wool next to the skin all the year round, while others prefer cotton, linen or silk for the lowest layer of the clothing sandwich. There are certain clothing principles, however, which have an almost universal application.

Weight for weight, clothing made up of many layers is much warmer than the single-layered garment, for the air spaces between the layers are useful in checking the rate of loss of heat by the body. Two pairs of silk stockings, for example, may keep the legs as warm as an inelegantly thick pair of woolen stockings, although the conductivity of silk is about three times greater than that of wool. Cotton and linen conduct heat about five times more effectively than does wool, a fact to remember in the tropics. The comparatively great facility with which wool absorbs and retains moisture is another point of importance, for the retention of moisture by a garment helps to prevent rapid cooling of the body.

IN A discussion of the value of air spaces in clothing one should not ignore a universal yet much underrated garment, the newspaper. Whatever the value and veracity of the information it contains, the warmth it provides is incontestable. As a covering over the knees in a drafty railway carriage it is almost the equivalent of a rug. Under the overcoat, coat or waistcoat the newspaper is practically as effective as leather in providing warmth outdoors, on deck at sea or on the open road. At night, in a hotel bedroom inadequately warmed and providing only a blanket or two on the bed, the cunning insertion of newspaper between the various layers of the bedding will prevent the necessity of getting up in the middle of the night in search of garments imprudently shed earlier.

It is a curious physiologic fact that women can with impunity dress more lightly than men. Before this fact was discovered men used to be patronizingly pitiful in their judgment of the flimsy garments in which women, the "mar-

tyrs to fashion," disported themselves. It is now, however, generally admitted that woman, whether she be in the water or on dry land, is physiologically better equipped than man in the conservation of body heat. Unless this fact is borne in mind, hints to travelers on how to keep warm are apt to be wide of the mark. It has recently been calculated by Prof. E. Friedberger, director of a research institute for hygiene and immunity in Germany, that while a dog's hair in winter represents only 1.4 per cent of the animal's total weight, the winter clothing of a man represents about 10 per cent of his total weight. Taking an average man and an average woman of approximately the same height and weight in the early thirties, Professor Friedberger showed that the weight of the man's clothing was more than four times that of the woman's, an amazing difference. As was to be expected the temperature and relative humidity under the clothing were much higher in the case of the man.

These sex differences in the total weight of clothing may not be as great in the Anglo-Saxon and Latin countries as they are in Germany, but they surely exist in most countries. The reason, as already pointed out, is partly physiologic. But tradition and fashion also play a part. According to Professor Friedberger, some twenty years ago the winter clothing of men and women was approximately the same in weight. This suggests that versatile woman has stolen a march on the halting conservatism of her mate. At present she is not only much more lightly clad but she is also better equipped with interchangeable parts. She is free to don or doff at a moment's notice a shawl or mantle, whereas the man who has put thick and heavy underwear on in the morning often feels obliged to wear it for the rest of the day. The man who is willing to learn from his better half will travel in garments of which the more superficial can be shed easily and at a moment's notice.

In justice to the male traveler it must, however, be admitted that in the matter of clothing, women are sometimes serious warnings as well as bright examples. A few years ago a Danish doctor read a paper before the Medical Society of Copenhagen. He had, it would seem, discovered a new disease. Though the disease was quite new he had already observed several cases of it. All his patients were young women. Their legs were red and swollen in patches down to a fairly well defined line at the level of the ankles. The legs were not only numb but also painful, particularly in cold weather. The patients complained of feeling cold and tired, and the blueness of their hands and arms was indicative of a defective circulation. The participants in the discussion on this new disease proffered many ingenious theories concerning its origin. The severely scientific atmosphere of the debate was relieved when a shrewd old doctor had the courage and common sense to remark that this new nosological entity was nothing more or less than cold feet, a sequel to the wearing of skirts which ended about the knees and stockings made of the flimsiest silk. The feminine traveler who wishes to wear silk stockings in cold weather would do well to have shoes large enough to accommodate two pairs of such stockings at a time.

Boots and shoes are so much subject to the dictates of fashion that the wearer does not always achieve the comfort he or she presumably deserves. Every country has its own fashions in footwear. The wide-awake, unprejudiced traveler who has safely escaped from the domination of fashions at home may find, on copying the natives, that he is more comfortably shod than he has ever been before. At present there is a general belief that the boot which is low of heel and instep and wide over the toes is the acme of comfort and common sense, however much it may be the last word in ugliness. A distinguished surgeon has lately remarked that more than two thirds of the civilized women of the world wear shoes with heels more than 2 inches high. It is certain that high heels make the feet look smaller and smarter. It may be heresy to spread the teaching that

high heels promote stooping, round shoulders, curvature of the spine, displacement of the abdominal organs and deformities of the feet such as bunions, hammer-toe and corns, but the observant traveler might do worse than keep an open mind and a watchful eye in this matter. Of course, much depends on the nature of the ground to be covered; no one would recommend high heels for rough walking. In any case the pencil-pointed heel is to be condemned outright.

LODGINGS should be chosen with scrupulous care; otherwise the traveler will sooner or later suffer, particularly if the wife and children are along. It is as easy as it is stupid to walk into a beautiful vine clad cottage and to arrange with its occupants that they shall lodge the entire family for the holidays. Perhaps some member of the cottager's family may be suffering from open infectious tuberculosis or one of the many other infectious diseases. It is a useful expenditure of time and money to make searching inquiries about the prospective hosts and their children. The traveler who is not a doctor cannot be expected to detect signs of disease with professional ease, but there are many diseases, not only those of the skin, which stamp the patient so clearly that even the layman cannot be excused for overlooking them. The traveler, particularly when he is a family man, should be an amateur detective in the choice of his lodgings. When in doubt over the choice of lodgings, the traveler can often obtain useful information from the local health authorities or a medical practitioner.

The traveler's choice of hotels is in most cases profoundly influenced by the length of his purse, however conscious he may be of the fact that the cheaper the hotel, the lower its standards of cleanliness and other hygienic qualities. Sometimes, however, it is a real economy to stay at a comparatively expensive hotel. Catching diseases and acquiring parasites are the most expensive pastimes of all. Occasionally one's life may depend on the choice of a hotel bedroom. Every story has its own special risks. The lower the room is, the more accessible it may be to intruders, from snakes and cats to burglars. The traveler who chooses a room higher up is more likely to be distinctly inconvenienced if a fire breaks out. A risk common to every story is that of carbon monoxide poisoning, whether it is from a leaky gas pipe, the fumes of a stove, or the exhaust from motor cars in a neighboring garage.

Pure carbon monoxide is a tasteless, odorless gas. The degree to which human beings are susceptible to it varies greatly. A dose of this gas has apparently no effect whatever on some persons; it may give others a splitting headache, dizziness, nausea, vomiting, lack of appetite, impairment of memory and general weakness and nervousness. Many a traveler who awakens

in the morning feeling strangely uncomfortable is really suffering from prolonged inhalation of exhaust fumes generated in a garage just below his windows. In large towns, gas poisoning is responsible for more deaths than any other single poison. For every death from carbon monoxide poisoning, there are countless nonfatal cases, most of which escape detection. Even in the open street the exhaust gases from motor cars may be so plentiful that they are demonstrable in the blood of policemen on point duty.

THE bathroom has special dangers of its own for the traveler. If he is not poisoned by gas from the geyser or electrocuted by touching electrical fittings with wet hands, he may, if suffering from a weak heart, kill himself by taking too hot or too cold a bath. Deaths from the first two causes imply faulty fittings. At home one may have taken the necessary precautions to eliminate these risks. But when traveling from country to country, one may sooner or later suffer from the carelessness of an architect or landlord in this regard. The ideal bathroom is, of course, one in which the hot water comes from a tank in the cellar. In many foreign houses the water is heated by a geyser in which the mechanism is apt to be complicated and at times out of order. The efficient geyser, provided with a proper escape, burns gas so completely that none is left to cause symptoms of poisoning; but if the combustion of gas is to be complete the supply of oxygen in the bathroom must be adequate.

It is all very well to argue that the ventilation of a bathroom and the proper working of a geyser are the architect's business. But coroners' inquests and postmortem examinations have repeatedly shown that, incredible as it may seem, architects and builders are at times liable

to grave miscalculations responsible for defective ventilation and totally inadequate chimneys for geysers. The chimney that is exceedingly narrow is, of course, much more likely to become completely blocked by soot, birds' nests and other rubbish than the chimney of ample dimensions.

Never touch a switch or other electrical fittings in a bathroom when your hands are wet. If you do so while standing with bare feet on a wet floor, you are asking for trouble. Nervous ladies of a pessimistic turn of mind have been known to install an electric bell within reach as they lay in the bath with the intent to give a ring if they felt faint. If such a bell is in contact with the main electrical system in the house, the wet-fingered bather may experience something much worse than a momentary faintness.

Colds caught on a journey are often traced to the damp sheets of an unaired hotel bed. Damp hotel sheets, whose moisture makes them effective conductors of heat, may reduce the tired traveler's temperature to such a degree that his resistance to the germs picked up during the day is diminished to a dangerous level. What often happens is that he is so tired when getting into bed, that, though he at once notices it is cold and damp, he does nothing more than curse the landlady and make a mental note of what to say to her the next morning. If he is wise, he will discard the damp sheets and curl up in woolen garments which may feel stuffy but will at least give warmth. It is not generally known that shivering is nature's automatic mechanism for raising the temperature of the body when it is getting too low. One may anticipate this process by shivering voluntarily with the whole body when the bed begins to feel chilly and one is simply too tired or lazy to get up and hunt for more blankets.

All the seat locations in a railway carriage are not equally healthy. The least healthy is the one facing the engine and nearest the window. When the window is open, soot and other foreign bodies are blown into the traveler's face, and the germs so acquired may multiply all the better with the body constantly being chilled by drafts.

Most persons probably prefer to travel facing the engine. Some years ago a commercial traveler made the interesting observation that the vague ill health from which he suffered when traveling with his face to the engine vanished completely when he sat with his back to it. Persons who are subject to train sickness should study critically the effects on themselves of sitting in the different seats of a railway carriage. What is one man's meat is another man's poison, and it is only by personal experiment that one can learn which position suits him best. It may be the one which is most drafty. If the traveler is an Anglo-Saxon, he may not mind. The French have a horror of a *courant d'air,* and science will perhaps one day show that they are quite right.

[NOTE.—"Seasickness," the third article in Dr. Lillingston's series of "Health Hints for Travelers," will appear in the February issue.]

GLANDS—Their Influence on Body Build and Behavior

(Continued from page 36)

and upper thighs become extremely fat. In addition, large amounts of fat are deposited in the lower region of the abdomen, so that at times the fatty tissue almost buries the already small, underdeveloped sex organs.

The child thus afflicted may be thought by his parents to be healthy because he is "putting on weight," but an examination of the posture of the child quickly tells the story. He stands with his knees close together and his feet far apart, so that frequently flatfoot develops. This of course tends to interfere with the child's normal activity.

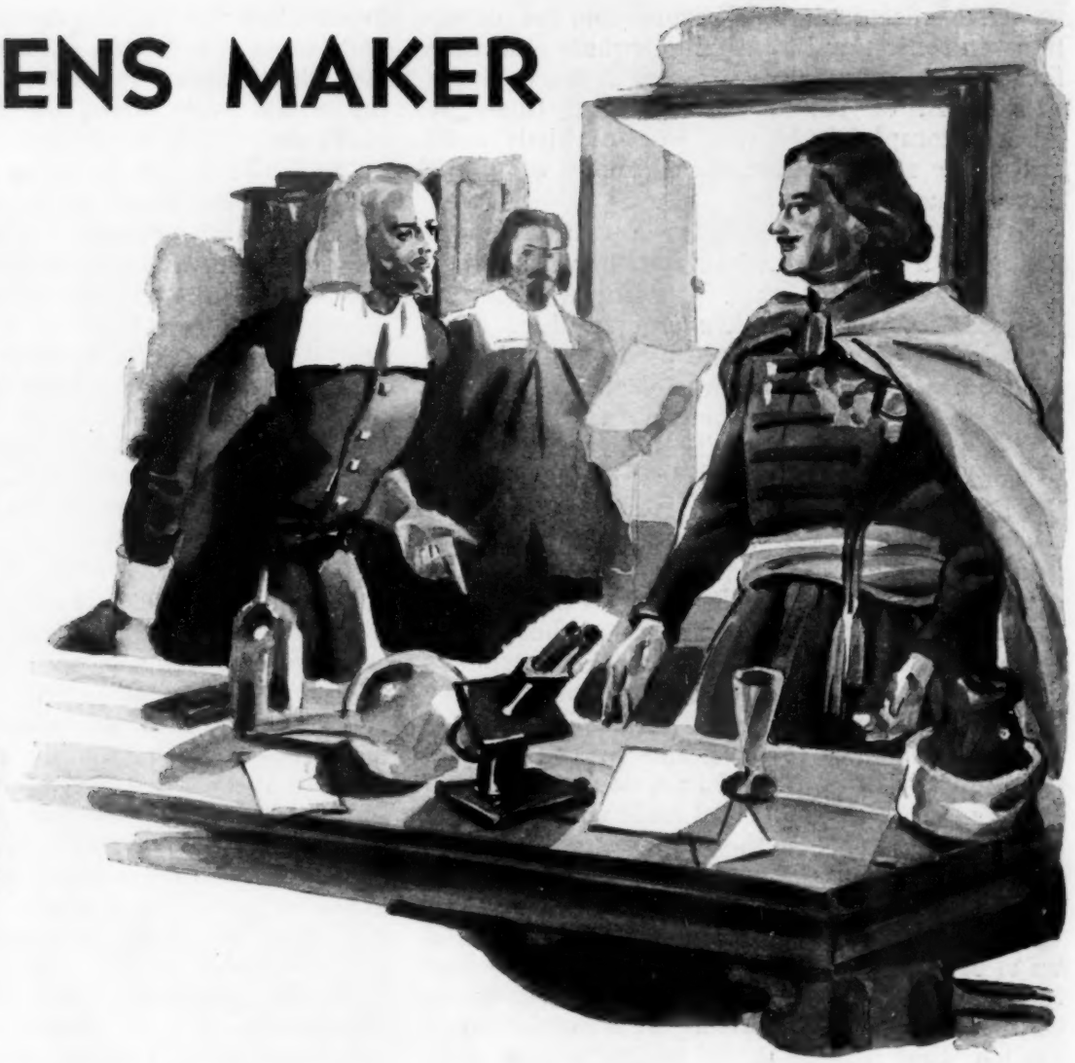
While the mentality of the child is not necessarily affected so far as the ability to handle his school work is concerned, his general behavior becomes involved. In some cases he becomes the typical dull fat boy so aptly described by Dickens in "Pickwick Papers." One such case observed by a physician within the last year was that of a lad of 12 who had always played alone. After several months of treatment his appearance became more boylike. He began playing football with the other boys and asked for boxing gloves.

It is not to be supposed that every case of overweight or dulness is due to a disturbance of the pituitary gland. It may be due, for example, to a defect of the thyroid gland. As a matter of fact there are those who believe that the dulness of the fat body is always a result of thyroid involvement.

[NOTE.—Part II of Dr. Rubinstein's article will appear in the February issue.]

The LENS MAKER

By
Alice Clark Gilmore



"I HAVE HEARD MUCH OF YOUR WORK WITH THE MICROSCOPE, FRIEND LEEUWENHOEK, AND I MADE MY ROUTE TO PASS THROUGH DELFT SO THAT I MIGHT SEE YOU AND YOUR LENSES."

CAST OF CHARACTERS

ANTONJ VAN LEEUWENHOEK, the lens maker
HANS WOLKE, a boy of 10
DAME LUNTER
MYNHEER DE BLOEME, the burgomaster
PETER THE GREAT
FOUR ATTENDANTS
TRUMPETER
GROUP OF DUTCH BOYS AND GIRLS

SCENE: The workroom of Antonj van Leeuwenhoek in Delft in the year 1698. There is a table, right center, littered with a number of articles, chief of which is a microscope. Other articles are in containers of various sizes; there are pieces of crockery, bits of glass, some cloth, a plate on which is a fish's tail, another plate containing a tadpole, a sheep's tail and numerous other items. The door, right, leads to the kitchen; the door, left, to the street. There is a window, center back, at one side of which depends a large key. As the curtain goes up, Leeuwenhoek is seen standing behind the table peering through his microscope. He takes a drop of liquid from one container with a small sharpened stick, places it under the lens and peers at it. Then he wipes the glass, takes another drop from a different container and looks at that. All the time his lips are puckered up in a humorous expression, and now and then he whistles a few notes happily but without tune or rhythm. There is a soft knock on the door, left. The door is opened cautiously, and the tousled tow head of Hans Wolke is thrust in.

HANS: May I come in, Mynheer?

LEEUWENHOEK *(looking up and peering at the boy as if he hardly sees him):* Ah, it is you, little one. *(Then he speaks heartily.)* Come in, come in, lad. But keep those clumping feet from shaking the floor overmuch. My lenses are sensitive fellows.

HANS *(tiptoeing awkwardly to the table):* What have you there, now? May I look? The last time 'twas a frog's leg you showed me.

LEEUWENHOEK: You may look, lad, but wait. *(He adjusts the microscope.)* 'Tis but a drop of stagnant water.

HANS *(in a disappointed tone):* Oh, then I shall see naught but a bubble.

LEEUWENHOEK *(smiling):* Now look!

HANS *(closing one eye and applying the other to the microscope):* 'Tis nothing but a gray blur.

LEEUWENHOEK: Let me adjust it again. *(He does so.)* There, that is better.

HANS *(looking again and speaking slowly at first and then excitedly):* I . . . see . . . something . . . moving. A lot of them . . . like little bits of jelly. There's a big fellow. What are they? Look! Look! The big fellow broke in two!

LEEUWENHOEK *(smiling benevolently and rubbing his hands together):* Those are animalcules, Hans.

HANS: Are they in all water, just like these?

LEEUWENHOEK: No, but we can easily conceive that in all rain water which is collected from gutters or cisterns and in all water exposed to the air, animalcules may be found for they may be carried thither by the particles of dust blown about by the wind.

HANS: We drink rain water. Won't the ani—what-do-you-call-them hurt us?

LEEUWENHOEK: No, lad, not as a usual thing. But to be sure they will not, let us kill them.

HANS: Kill them? How?

LEEUWENHOEK: By boiling. See, we will put some of the water from this jar into a skillet, and you shall place it on the stove in the kitchen. Then we shall see what happens.

(Hans takes the skillet and exits, right. Leeuwenhoek plucks a hair from his head, places it under the microscope and studies it. There is a sound of laughing and shouting in the distance, growing louder as a group of boys and girls draws near. Cries of "Hans, Hans, here we are" are heard, and Hans comes running from the kitchen.)

HANS: They're the lads from school. I told them about you and your lenses, and they did not believe me.

(There are cries of "Hans—ho—Hans! Ask Mynheer to let us come in and see his lenses.")

HANS *(anxiously to Leeuwenhoek):* Shall I let them in? *(Coaxingly.)* Then they will believe me.

LEEUWENHOEK *(indulgently):* Aye, let the lads in.

(Hans runs to the door, left, throws it open, and the boys and girls troop in. They stand somewhat shyly near the door.)

HANS: May we show them the drop of water, Mynheer?

LEEUWENHOEK: Aye, we will. *(He puts drop of stagnant water under the microscope and adjusts the lens.)* Now look for yourselves and tell me what you see. *(All the boys look through microscope one at a time, but the girls remain close to the door.)*

LEEUWENHOEK: Well?

FIRST BOY: I saw some specks.

SECOND BOY: Mine moved.

THIRD BOY: I saw naught.

HANS *(hotly):* Then you are blind.

FOURTH BOY: There were little bubbles that swam about in a lake.

LEEUWENHOEK *(to Hans):* See if the water boils, lad.

(Exit Hans, right, returning immediately with skillet.)

HANS: 'Twas boiling right hard, Mynheer.

(Leeuwenhoek puts a drop on the glass and adjusts the lens.)

LEEUWENHOEK: Now look. We have boiled some of the water.

HANS *(looking through the microscope, then glancing up triumphantly):* Not a thing stirs.

FIRST BOY *(looking):* Where have they gone?

HANS: I know. Heat kills ani—what are they, Mynheer?

LEEUWENHOEK: Animalcules. Yes, heat kills the little beasties. But now you must be off, children. Hans and I have serious business on hand.

HANS *(swaggering a little in front of the children):* Do you believe me now, Jan and Peter and the rest of you?

FIRST BOY: 'Twas no lie you spoke to us.

SECOND BOY: 'Twas the truth and naught else.

THIRD BOY *(stubbornly):* I saw naught.

LEEUWENHOEK *(suggestively):* Good day to you, children.

ALL: Good day, Mynheer. *(They troop out. One little girl comes shyly back, drops a quaint curtsy and says, "Thank you, Mynheer.")*

HANS *(after all have gone):* What is the serious business? What are we going to do?

"LOOK! LOOK! THE BIG FELLOW BROKE IN TWO!"

LEEUWENHOEK: None other than the fish's tail, Hans. Already have I seen strange doings in it. *(Both are excited as Leeuwenhoek places the fish's tail under the microscope. He is adjusting the lens when there is an impatient knock on the door, which is opened before they can answer, and Dame Lunter comes hurriedly in.)*

LEEUWENHOEK *(putting up a protesting hand):* Good morrow, Dame Lunter. Pray do not interrupt us just now.

DAME LUNTER *(shrilly):* Interrupt! Interrupt! Do you know, Antonj van Leeuwenhoek, that it is 10 o'clock of the morning?

LEEUWENHOEK *(peering through the microscope without looking up):* Is it, good Dame? *(He speaks gently.)* We are very busy, Hans and I, but you may come over and look at my fish's tail.

DAME LUNTER *(indignantly):* Ten o'clock, and your dry-goods store not yet opened! Fish's tail indeed! Is a fish's tail of more importance than my Katje's apron which lacks a half length of blue linen to complete it—and your shop not yet opened!

LEEUWENHOEK: I'm sorry, Dame. The key hangs yonder on the nail. Take it, and get the linen for yourself. 'Tis on the second shelf behind the door, or else under the counter by the stove. There are some shears somewhere.

DAME LUNTER *(somewhat mollified):* I'll find them if they are anywhere in Delft. *(She takes the key and exits, left.)*

LEEUWENHOEK: Now the good Lord send us peace, lad, while we hunt for the queer little hairlike tubes in this fellow's tail, the tubes that connect the veins and arteries.

HANS: And have you already seen them, Mynheer?

LEEUWENHOEK: I have, more than once. And they prove the circulation of the blood as nothing else can. *(He has placed the fish's tail beneath the lens and is peering at it through the microscope while Hans stands by with impatient eagerness. Leeuwenhoek has just allowed Hans to look when the door, left, is pushed rudely open and Burgomaster DeBloeme strides in. He is a large, pompous man in middle life. Just now he is irate.)*

DEBLOEME: Antonj, have you cleaned the town hall today?

LEEUWENHOEK: Not yet, Mynheer. I am very busy. Will you come over here and look at this fish's tail? 'Twill interest you much.

DEBLOEME: That I will not. I have work to do, and so have you. The council appointed you janitor of the town hall, and how do you fulfil your duties? Instead of sweeping and scrubbing and sanding the floor *(scornfully)* you are studying fish's tails and tadpoles and other such useless things.

LEEUWENHOEK: Do you then call it useless that I have followed in a tadpole the course of the blood from the heart back to the heart, or that I have found that the red corpuscles in man are round but that in frogs and fishes they are oval?

DEBLOEME: But what good is all that trumpery stuff? Will it put guilders in your pocket or clean the town hall? *(Pompously)* I warn

you now, Antonj van Leeuwenhoek, that you will lose your position as janitor of the Delft town hall unless you mend your ways and that right speedily.

LEEUWENHOEK *(persuasively):* But do come and look at the fish's tail, Mynheer.

DEBLOEME *(indignantly):* Once more I tell you I will not. *(He turns to go out angrily and almost collides with Dame Lunter who is entering, left, hastily. DeBloeme steps back with a muttered apology, and Dame Lunter comes toward the front.)*

DAME LUNTER: I cannot get into the dry-goods store because there is a big yellow dog on the broad step, and move he will not.

LEEUWENHOEK: A dog, you say? Oh, good Dame, while he is still on the broad step, pray secure a flea for me from his back.

DAME LUNTER *(indignantly):* A flea! A flea! You hear him, Mynheer Burgomaster? He asks *me,* a clean and respectable Dutchwoman, to get for him a flea. The man is deprived of reason!

LEEUWENHOEK *(gently):* No, Dame Lunter. I asked for the flea because I wished to study one. I had several, but they all got away. Hans shall go with you and secure the flea and chase away the dog. Run along, lad.

(Exit, left, Dame Lunter and Hans, the latter reluctantly.)

DEBLOEME *(seeing Hans for the first time):* And what is my grandson doing here? Why is he not at school?

LEEUWENHOEK: He said there was no school today.

DEBLOEME: I know not why. *(Enter Hans, left, his hand clutched tightly.)*

HANS: Here they are, three of them. Where shall I put them, Mynheer?

LEEUWENHOEK: Here in this little box. Can you get them in without losing one? *(The transfer is made without mishap, DeBloeme looking on scornfully.)*

DEBLOEME *(still scornful):* And what, pray, are you going to do with these minute and despised creatures which are produced from sand or dust?

LEEUWENHOEK *(earnestly):* But they are not produced from sand or dust any more than eels are generated from dew.

DEBLOEME: And do you mean to tell me that the great and learned Aristotle was wrong when he believed in spontaneous generation?

LEEUWENHOEK *(with dignity):* He was wrong as my lenses will prove.

DEBLOEME: Or that the respectable and scholarly Jesuit was wrong who proved that shellfish were bred by spontaneous generation from mud and sand?

LEEUWENHOEK: He was wrong. For my part I hold it equally as impossible for a small shellfish to be produced without generation as for a whale to have its origin in the mud.

DEBLOEME *(shaking his finger at Leeuwenhoek):* You are an ignorant and unlearned man. You know neither Latin nor Greek. Me—I have studied both, and I say you are profane and sacrilegious peering through your lenses into nature's arcana.

HANS *(who has been trying to speak for some time):* But Mynheer Leeuwenhoek is not ignorant, Grandsire. He is a corresponding member of the Paris Academy of Science, aren't you, Mynheer?

LEEUWENHOEK *(modestly):* Now, now, lad.

HANS: And the queen of England came to see him. And he is a Fellow of the Royal Society. I've seen the paper that says so. Let me show it to him, Mynheer.

LEEUWENHOEK *(hesitatingly):* Well—

(Hans darts to the table, opens a drawer and produces a silver box, long and narrow, from which he takes a roll of parchment covered with gold and purple seals.)

HANS: See, Grandsire. *(He holds it out for his inspection.)*

DEBLOEME: Very pretty, but it doesn't prove to me that weevils are not bred from wheat or eels from corruption. I know my Shakespeare, which is more than this ignorant fellow does, and Shakespeare says *(reciting pompously),* "Your serpent of Egypt is bred now of your mud by the operation of your sun; so is your crocodile." *(With a change of tone and turning suddenly on the boy)* But why are you not at school, Hans? Will you, too, grow up to be as ignorant as Antonj?

HANS: School was let out for the day, Grandsire, when we went there this morn. Peter the Great is passing through Delft today.

DEBLOEME: Peter the Great! *(Angrily)* Why did you not tell me before? He'll be sure to visit the town hall, and the place is all dirt! Will you not then be ashamed, Antonj, or have your mad searchings driven all shame from you? Since you have neglected your work, I and my good wife must do it for you. *(He strides toward door, left, but stops, turns, shakes fist at Leeuwenhoek and shouts):* But know now, Antonj van Leeuwenhoek, that you are discharged. You are no longer janitor of the Delft town hall. *(Exits left. Hans and Leeuwenhoek look at each other as DeBloeme goes out; then Hans goes to Leeuwenhoek and takes his hand.)*

HANS: Don't you care, Mynheer.

LEEUWENHOEK *(smiling a little):* Care, lad? *(Then in a brisker tone)* Come, let's look at the flea. *(Hans, with some difficulty, extracts a flea from the little box.)*

HANS: But can we hold him under the lens?

LEEUWENHOEK: Let us put him in this drop of fish's glue. 'Twill hold him still while we look at him.

(Outside there are heard voices and a tramping of feet. A trumpet is blown, and a voice

cries, "Way! Way for Peter the Great! The Czar of all the Russias passes. Way! Way!" There is a sharp rap on the door with a sword. The same voice says, "What, ho, within, Antonj van Leeuwenhoek! Peter the Great would enter." Leeuwenhoek hurries to door and throws it open, bowing very low.)

LEEUWENHOEK: Enter my humble workshop, Your Majesty, and welcome.

(Enter the trumpeter, two attendants, Peter the Great and two more attendants. Leeuwenhoek and Peter the Great bow ceremoniously to each other. The trumpeter and four attendants stand stiffly back against the wall leaving Leeuwenhoek and Peter the Great, center front. Hans, awestricken, is behind the table.)

PETER THE GREAT: I have heard much of your skill with the microscope, friend Leeuwenhoek, and I made my route to pass through Delft in order that with my own eyes I might see you and your lenses.

LEEUWENHOEK: You are most welcome, Your Majesty. Will you look now? We have a flea under the lens at the moment.

(Peter passes around to back of table. Leeuwenhoek adjusts the lens and motions for him to look. He does so, studying the object for some time, then looks up with a smile.)

PETER THE GREAT: It looks like a fearsome wild beast.

LEEUWENHOEK *(also smiling):* And if you should study this fearsome wild beast, you would find it to be endowed with as great perfection in its kind as any large animal.

PETER THE GREAT: And yet how few will believe you! What else may I see?

HANS *(whispering to Leeuwenhoek):* The tadpole.

PETER THE GREAT *(turning and noticing Hans):* And who is this, pray, a would-be scientist?

LEEUWENHOEK: This is my young friend, Hans Wolke, and I verily believe the most loyal friend I have in all Delft. *(As he talks, Leeuwenhoek removes the flea and places the tadpole under the lens.)*

LEEUWENHOEK: Will you look now, Your Majesty? If you do not see clearly move this little rod up or down—so. *(He shows him. Peter does so, earnestly, and then he exclaims in great delight.)*

PETER THE GREAT: Marvelous! Do I really see blood passing through the various tubes?

LEEUWENHOEK: You do, indeed you do. Even the great English physician William Harvey was not able to find how it could be done.

PETER THE GREAT: You are a wonderful man, and I wish I could stay longer, my friend, but I must not linger. Would I could take you to Russia with me to confound the learned scientists there. I bid you farewell.

LEEUWENHOEK: Farewell, Your Majesty.

(Both men bow, and Hans bows very low. Exit the trumpeter, two attendants, Peter the Great and the other two attendants. Leeuwenhoek and Hans stand listening as the procession passes down the street. The trumpet sounds, and a voice says, "Way! Way, for Peter the Great. The Czar of all the Russias passes. Way! Way!" The voice dies away in the distance. Hans runs to the window and looks out excitedly. He turns from time to time to tell Leeuwenhoek what is going on. Leeuwenhoek stands behind the table looking through the microscope.)

HANS: They are going down the street. *(Pause)* Jan and Peter and Katje and Jacoba and Mathias are following. *(Pause)* And Dame Lunter. *(Pause)* And the yellow dog. *(Pause)* Grandsire is on the town hall steps. He is smiling and rubbing his hands. *(Pause)* O, Mynheer, Mynheer *(excitedly)* the procession goes right by. They do not see Grandsire. He is not smiling any more.

LEEUWENHOEK *(without looking up):* And Peter the Great did not go into the town hall?

HANS *(coming down and standing beside Leeuwenhoek, who puts his arm across the boy's shoulder):* He didn't even look at it.

LEEUWENHOEK *(gently):* That's too bad, too bad. *(He turns briskly back to the microscope.)* Now let's take another look at Mynheer Tadpole.

(Curtain)

The Autobiography of a Pair of Glasses

(Written for the Sight Saving Council of Miles Standish School, Cleveland.)

I was a pair of glasses upon a little boy.
He treated me unkindly, as if I were a toy.
He heard about a special class where he could save his sight.
And I'm very happy, for he's learned to treat me right.

He puts me on the dresser and rests me on my bows.
He never lays me on my lenses; that scratches them he knows.
Then he washes me each morning, until I fairly gleam.
He puts me on with pleasure, for I'm straight and firm and clean.

—ARTHUR GORDON (Age 10).

SCHOOL AND HEALTH

A Department Conducted by J. MACE ANDRESS, Ph.D.

56 Clyde Street, Newtonville, Mass.

When Is a Child Mentally Healthy?

THE FIRST OF A SERIES OF EDITORIALS ON THE MENTAL HEALTH OF CHILDREN UNDER THE HEADING OF THE CLASSROOM TEACHER AT WORK

TOO OFTEN it is assumed that if a child is in excellent physical condition he must have a healthy mind. Many school systems delight in telling about the schoolrooms in which every child is free from dental defects. They publish graphs showing the number of children at the beginning of the year that needed their tonsils removed and the small number that remained in June. They delight in telling how they have greatly reduced malnutrition. They infer therefore that if they could make the child 100 per cent perfect physically they would achieve a perfect score in health education. If mental health is considered at all, it usually narrows down to the belief that a healthy mind must naturally reside in a healthy body. To a certain extent this is true, for physical vigor tends to promote a feeling of physical well being and happiness, which are two important characteristics of a healthy mind.

There are innumerable cases which show without doubt that health education and health service extend far beyond filling teeth, removing adenoids and getting children to gain in weight. This was true of young Francis. He was poor in his studies and had become a disciplinary problem. He was fond of being a bully. Nothing seemed to please him more than to tantalize children younger and smaller than himself. One day when his mother asked him to wash the dinner dishes he proceeded to throw them around the kitchen until nearly all of them were broken. In days gone by, people would have thought that Francis was possessed of the devil. Probably he would have been beaten cruelly. Francis thought that all the world was against him. Nobody knows what might have happened to him later in life if he had not found a friend. Possibly he would have found his way to a so-called reform school or a prison. Fortunately he was turned over to an educational guidance clinic. Francis was found to be in excellent physical condition, and further tests showed that he was above the average mentally. A doctor finally won the confidence of Francis. He had a lead as soon as he heard that because his hair was a carrot red the boy was nicknamed "Red." Francis was annoyed by this. As soon as his companions discovered his discomfiture they lost no chance of reminding him of his red hair. After talking over his problems with the doctor, Francis felt better. He was told about other people who had had red hair and yet had been beloved and had become successful men. Francis was encouraged to make a fresh attack on his school work. Finally through proper guidance the boy became reconciled and even happy in a world in which he was destined to be called "Red." His outbursts of temper disappeared, his behavior soon became acceptable to his schoolmates and to his family, and there was marked improvement in his school work. He had learned how to face his problems courageously and effectively. He had become mentally healthy. The trouble with Francis was not a lack of bodily health. He had an exuberance of physical health, but he lacked proper mental control.

The White House Conference on Child Health pointed out that thousands of children in our public schools are mentally, socially and emotionally maladjusted. They are the recruits who help to swell the number of patients in mental hospitals today. From this group also come that large army of men and women who break down when called on to meet the major problems of life.

Today educators are beginning to define health in a broad way so as to include both body and mind. The healthy minded child takes a keen interest in living. He meets his problems with initiative, courage and confidence. He is happy. What can the teacher do to promote mental health? The answer to this question will be the aim of the editorials that are to follow.

In the February number the editor will contribute an editorial on "What Children Need Training in Mental Health?"

Health Teaching in January

THE TEACHER MAKES AN INVENTORY OF PERSONAL ASSETS

THIS IS the season when we greet our friends with the customary salutation, "I wish you a Happy New Year!" It is a delightful custom that is found in many lands. At the beginning of the new year we are all looking forward with a certain amount of confidence and hope. We are conscious of some of our failings during the preceding months; we are inclined to think that the year to come will be more favorable in every way. But all too often as the year passes, our purposes grow dim and our grand program of achievements is not fully realized.

If a person accepts a fatalistic philosophy he assumes that there isn't much he can do about the development of his own character. Fortunately most of us believe it possible to take a hand in the direction of our own growth. We accept in part at least the philosophy of William Ernest Henley:

> I am the master of my fate,
> I am the captain of my soul.

Even before the advent of modern psychology thoughtful men like Benjamin Franklin found that they could guide themselves better in self mastery by using a checking list. Such a list not only suggests traits and attitudes that need to be strengthened, but it also makes possible a measurement of one's progress.

In one of the publications of the National Education Association some of the most important traits and attitudes of the ideal teacher are listed. You may like to check yourself on this list, as the publication suggests, and note especially those character traits that you intend to strengthen during the year.

The editor of this department would like to have his readers make out some kind of scale for the self measurement of the teacher's work in health education. Such a scale might include such questions as: Do I know the condition of each child's teeth in my classroom? Do I know whether the children clean their teeth at least twice a day? Do I know how many of my pupils have defective hearing? Do I seat hard of hearing pupils near the front of the room? One or two of the best scales sent in may be published. Even if you do not expect to have your scale published it would be stimulating and helpful to devise one merely for your own use.

SOLVING HEALTH EDUCATIONAL PROBLEMS

A CLASSROOM DEMONSTRATION IN NUTRITION

EVELYN L. BLANCHARD
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Have you ever thought of the possibility of teaching your children the principles of nutrition through a class demonstration with rats? Children find it fascinating. They are impressed by the facts they learn. The carrying on of such a project requires some exact knowledge. Miss Blanchard tells specifically how to make the proper arrangements.

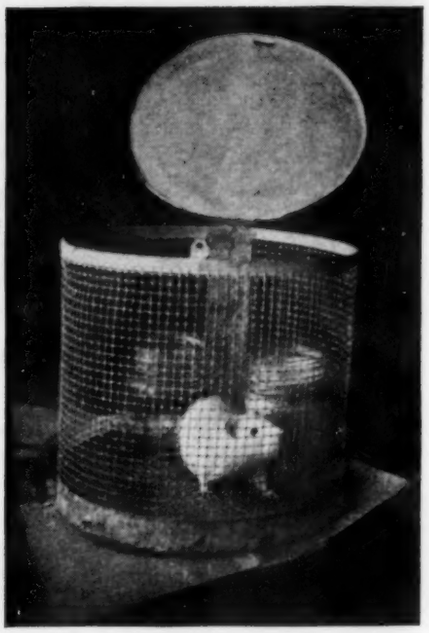
ONE OF the most effective ways of teaching children the importance of good diet is by means of a demonstration on white rats. Pictures and lectures may interest some children, but the effects of food on the health and growth of a living animal will usually interest all the children. Such experiments are easily performed; they require a comparatively small amount of equipment, and if they are conducted properly they are both interesting and effective.

White rats are the best animals for such a demonstration because they are small, clean and easily obtained. They are ordinarily quite tame or can be made so without much difficulty. White rats thrive on the same foods as human beings do; so they can be fed either a meat, a vegetable or a mixed diet. Their digestion and metabolism are similar to that of man; and for that reason white rats are used for nutritional research more frequently than are any other animals. Much information has been accumulated about them. The effects of the various dietary essentials on their health and growth have been studied; their reaction to different environmental conditions is known, and extensive data on their normal rate of growth and maturity have been collected.

One may obtain white rats from various sources. Usually the easiest way to get them is to write to the biologic laboratory or the experiment station of the state university or college. Should the laboratory have extra animals, they are usually glad to give them to teachers throughout the state if the shipping charges are paid. If animals are not available it will probably be possible to secure the address of the nearest biologic supply house. One may also obtain them from the Bureau of Home Economics, U. S. Department of Agriculture, Washington, D. C., when there is an oversupply of the rodents.

The number of rats needed varies with the type of experiment to be carried out. One rat to a diet may be used, but it is preferable to have two rats to a diet. This eliminates the possibility of inaccurate demonstration that might be caused by the illness or stunting of one of the rats. The rats should be about 4 weeks old and matched as to sex. The rats receiving the good diet should be of the same sex as those on the poor diet, because there is a difference in the rate of growth of males and females.

After the rats have been arranged for, it is well to have the cages constructed. If money is available they may be purchased from a biologic supply house; otherwise they may be constructed by a tinsmith or a manual training class. At least two cages are necessary, one for the rats on the good diet and the other for the rats on the poor diet. A cage such as the following will prove satisfactory: A piece of galvanized wire screening of ¼ inch mesh may be obtained from the hardware store. From this piece, circles, 9 inches in diameter, are cut to serve as top and bottom for each cage. A strip of wire, 29 inches long and 9 inches wide, may be wrapped around for the sides. The bottom should be set up about ½ inch. The top should be hinged with a piece of wire and fastened by a catch. If the cages are to be used repeatedly, it would be wise to have the rough edges at



the top and bottom of the cage covered with a strip of galvanized iron. Under the cage is placed a pie tin or an enameled pan with several thicknesses of newspaper to catch the feces, urine and scattered food.

Food and water are supplied in small jars. Cold cream jars will serve the purpose. A scale or a balance graduated in grams may be used to weigh the animals. They should be weighed once a week, and a large chart or graph of their weights should be put in a conspicuous place for the children to observe. In addition to this, the teacher should call attention to the differences in the general appearance of the two groups of rats. The smoothness of their fur, the cleanliness of their tails and noses, the brightness of their eyes, their postures, their nervousness and alertness, as well as their weights often show marked differences.

Sometimes the rats are nervous after being shipped. They should be tamed as soon as possible. If one picks them up gently by the tail, grasping them firmly close to the body, and places them on the back of the hand they will usually sit quietly and sniff. If they are very nervous it will be necessary to repeat this several times a day for a few days until they become tame. If they bite it is no serious matter. They have been fed on clean food, and the bite is no more harmful than any ordinary cut or break in the skin.

Rats are sensitive. They must be treated gently and not teased, or they will become difficult to handle. They should not be placed in a window because they do not thrive well in a bright light or draft. They are sensitive to cold and should always be placed in a warm room at night. The rats should never be without food and water. The cages should

be scrubbed at least once a week with hot soap suds.

The characteristics of a healthy rat should be pointed out to the children at the beginning of the experiment so they will be able to see for themselves the difference in effect between the good and poor diets. Rats that are in good health are active and alert. They have soft, white, glossy hair, shiny eyes, and pink ears, feet and tail. The tail of a healthy animal is usually smooth and free from blotches.

Let us suppose that we have decided to use four animals for our demonstration. Two are fed the good diet and two the poor diet. A good diet, that is, one which provides all the necessary factors for health and growth, can be made by mixing 1 pound of dried whole milk powder, 2 pounds of dried whole wheat crumbs (or the same weight of ground whole wheat) and ⅔ ounce of table salt. The type of poor diet selected depends on the problem presented in the individual schoolroom.

If one desires to show the effect of too much candy the experimental diet may be selected to bring out this point. Such an experiment was carried out last year in the third grade of the Amphitheater school at Tucson, Ariz., by student teachers from the university. The experimental diet was prepared by mixing together equal parts of the whole wheat-milk diet and powdered sugar.

If the problem is to get the children to drink milk instead of coffee the two rats that are to receive the poor diet may be given dried ground white bread with clear coffee to drink in place of water. If the children drink a large amount of soft drinks instead of milk the rats may be given white bread and soda pop. Experiments such as these show striking results in a few weeks. If it is convenient to run the experiment over a longer period of time, one may give a diet even more typical of that of man. The rats receiving the good diet may be given a well balanced diet consisting of whole wheat bread, meat, vegetables and milk. The rats placed on the poor diet may receive meat, white bread and potatoes. This demonstration will soon show the need of milk and vegetables in the diet.

It is always advisable to give the rats on the poor diet a well balanced ration before they become too ill. If this is done while the animals are still quite young, that is, not more than 3 months old, they will usually improve and gradually become normal. The children can see that if they improve their diet they may likewise improve their health. Care should be taken to prevent the children from feeding the rats any food other than the diet selected, or the results may be other than anticipated.

It is surprising how concerned the children become about the well being of the rats. In one school the rats on the poor diet were growing as well as those on the adequate diet. The teacher was puzzled until one day she caught a child feeding the "poor" rats milk powder so they would not become ill.

A HEALTH PLAY BRINGS INTERESTING AND EFFECTIVE RESULTS

MARGARET LITTLE
Washington School
MILBURN, N. J.

Health plays may or may not be educational, depending on whether or not they promote wholesome interests and worthwhile habits. This is the story of the organization of a unit in which a health play was the leading feature. Note how the unit began, developed and achieved certain lasting results.

BEFORE presenting the play and discussing the creative work that resulted from this health unit, I should like to tell how the idea originated.

At the beginning of each month a pupil doctor and a pupil nurse were appointed in our room. Their duties included an examination of the pupils every morning for clean hands, nails, face, teeth and hair. The doctor reported to the nurse, who in turn kept a record of 100 per cent clean children.

The 100 per cent mark was not reached during the first month because the doctor continually reported to the nurse that one boy and one girl were careless. A consultation was held, and the committee was asked to give suggestions to help these pupils remember to keep health rules.

Finally it was decided to give a health play. Committees were appointed to plan the stage scenery, write the dialogue, select the characters and make the programs and costumes. At the end of three weeks of busy preparations the play was completed and was presented in the assembly.

MARY'S LESSON

CAST OF CHARACTERS

HOSTESS	BILLY
THREE ADULT VISITORS	MARY
MAID	CLEAN TEETH CHILDREN

SCENE 1

The living room of Mary's home. Guests have just arrived, and the hostess is chatting with them.

FIRST VISITOR: I have been worried for some time about my son, Billy, and I should like to know whether you ladies have any suggestions that would help me.

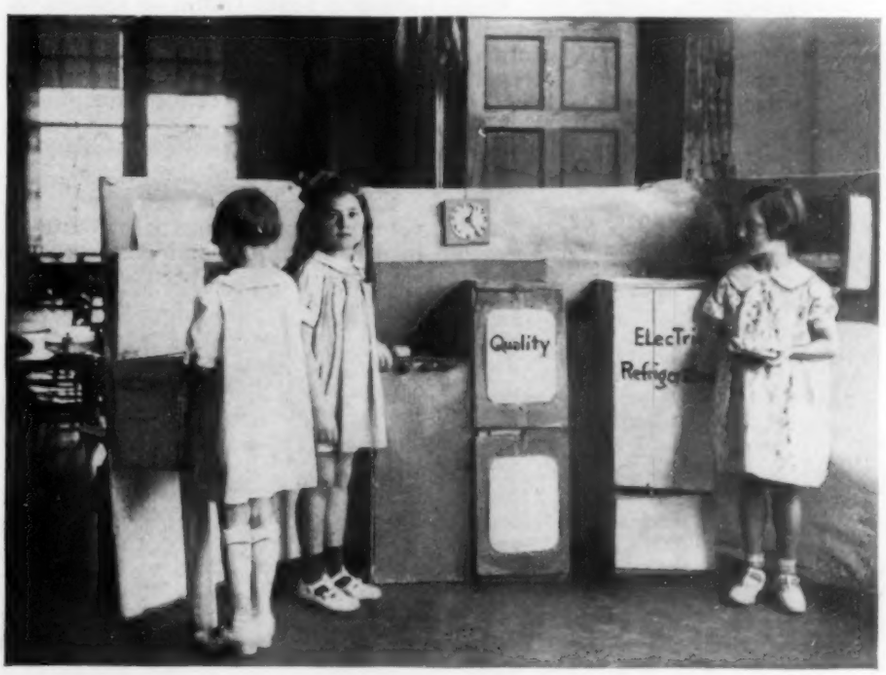
SECOND VISITOR: What seems to be the trouble with your son?

FIRST VISITOR: Well, the truth is, he doesn't like to take a bath. In fact he never wants to wash his hands.

HOSTESS: I am sorry to tell you that my little daughter, Mary, doesn't like to use a tooth-brush. I have to remind her every day to clean her teeth.

THIRD VISITOR: Perhaps if you talked to Billy and coaxed him he might try to be clean.

FIRST VISITOR: Oh, dear, talking doesn't do any good. I have talked and talked, but Billy insists on coming to the table with dirty hands.



(Maid enters and serves tea. Hostess tells maid to call the children for refreshments. Children quietly enter room.)

FIRST VISITOR: Billy, will you please come here and show Mother your hands.

(Billy holds his dirty hands in front of guests.)

FIRST VISITOR: I feel really ashamed of my son. Billy, I want you to wash your hands immediately.

BILLY: I'm sorry, Mother. Please excuse me, and I'll do it right away.

(Billy returns in a few moments, and maid serves milk to children. After refreshments have been served, guests thank hostess for enjoyable afternoon and depart.)

SCENE II

The bathroom of Mary's home, evening of same day. Mary is standing in the center of the room holding her tooth-brush in one hand and a towel in the other. She is talking to herself when her mother enters.

MARY: I don't want to clean my old teeth! I wish I didn't have any teeth. If I didn't have them I wouldn't have to keep cleaning them three times a day.

MOTHER: Now, dear, you must not talk like that. How could you chew your food without teeth? Come, it is 7 o'clock and time for bed.

(Mother leaves, and Mary washes her hands but neglects to brush her teeth. After she has finished she leaves the room. Presently some pupils dressed as teeth enter the room, and Front Tooth steps forward.)

FIRST FRONT TOOTH: Did you hear what Mary said?

SECOND FRONT TOOTH: Yes, indeed we did.

FIRST FRONT TOOTH: I should like to suggest that we leave Mary's mouth forever.

LOWER FRONT TOOTH: Before we go let us go into the bathroom and wash ourselves. Does every one agree?

CHORUS OF TEETH: Yes, indeed, let us all wash ourselves, for we know that Mary won't do it for us.

(Teeth begin scrubbing themselves and are singing tooth-brush song when Mary enters the room. She is very much excited.)

MARY: Oh, Mother, where are they? Please help me find them!

MOTHER: What are you talking about, my child?

MARY: Can't you see that my teeth have disappeared? What shall I do? What shall I do?

MOTHER: Never mind, dear, I am sure we shall find them.

MARY: Oh, here they are in the bathroom. Oh please, teeth, won't you come back into my mouth?

LARGE FRONT TOOTH: You have been very careless, Mary, and besides, you said you didn't want us in your mouth.

LARGE BACK TOOTH: We will never come back unless you promise to brush us three times a day.

MARY: I'll promise to do just as you say if you will only come back to my mouth.

TEETH IN CHORUS *(pointing fingers at Mary)*: Do you mean that, Mary?

MARY: I mean every word I say.

(Curtain is drawn, and Mary reappears with her mother. She is smiling.)

SCENE III

(Mary is standing at the sink and is singing as she scrubs her teeth):

Every morning as soon as I waken
I will always do what is right,
I will take my tooth-brush and brush my teeth,
To keep them all strong and white.

MARY: Oh Mother, I'm so happy to have my teeth back again.

MOTHER: Yes, dear, and Mother is happy too.

[THE END]

The unit did not end with the health play. Some one suggested that we build the rest of the house since we already had the bathroom. The children finally decided to build a Health Kitchen where only healthful foods would be cooked. A combination library and living room was also constructed. This room was used and enjoyed by all the pupils until school closed for the summer.

The following are among the actual outcomes of the project:

1. A clearer realization was developed that all must contribute to insure happiness and comfort.

2. The children learned to work together on material for buildings.

3. Newly developed health habits helped make the children conscious of their own appearance.

4. Habits of orderliness were expressed by keeping the rooms tidy.

5. All the children owned tooth-brushes, and all formed the habit of brushing the teeth twice a day.

6. The pupils were happy in knowing that they had completed something in which every one had a part.

7. The pupils read original stories which were later typed and put in an illustrated book called "Our Health Book."

WHAT THE MILKMAN BROUGHT

By Lora, age 7

One morning when I got up I heard the milk wagon coming down the road bumpity, bumpity, bump. I jumped out of bed and brushed my teeth. Then I washed my face and hands. I ran down stairs and brought in the milk. Then I helped mother set the table and we had breakfast. We had oatmeal and milk. After breakfast I ran out to play. What a good time I had.

CARING FOR MY TEETH

By Phyllis, age 7

I brush my teeth three times a day and they are healthy and clean. I like my teeth and they like me too, if I am good to them. When they have little holes in them I go to the dentist. The dentist fills my teeth and this helps to keep them new.

GOOD FOOD

By Marion, age 7

I am a healthy little girl.
I eat good vegetables.
I eat beans and potatoes.
I like spinach and I drink milk three times a day.
I eat fruit.
These are the kinds of fruit I eat: apples, oranges and bananas.

8. The pupils began to look in library books for material relating to health. Reference books were brought from the public library to aid in gaining knowledge on this important subject.

9. The class edited a weekly newspaper which contained information about the progress of the unit. Original stories, poems and news items were published weekly.

10. Oral reports on the progress of the work of committees were given daily by committees. Original poems were read. The class worked for better oral expression.

POEMS ON HEALTH

I know that I should take a bath,
Do you know that too?
Always use warm water
And plenty of soap suds too.

By Gloria, age 7.

Good morning little tooth-brush,
I'm glad to see you here.
I need you this fine morning
Before I go to school.
By Charles, age 3.

Here comes my tooth-brush
Hop, hop, hop.
I will pick it up
And brush, brush, brush.
By Betty, age 7.

11. Letters of invitation to the health play were sent to parents and friends. Programs were written and distributed before the play.

12. Finding the prices of vegetables, cereals and milk was an interesting task. The children enjoyed measuring articles of furniture, windows, and material for curtains, cushions and towels.

13. The spelling of new words needed in writing letters, stories and poems had to be learned.

14. Before actual construction work was begun the pupils drew up plans for kitchens, bathrooms and living rooms. An interesting study in design was introduced in preparation for making tile in the bathroom and wall paper for the living room. Simple design was also applied on towels and wash cloths for the bathroom. All creative work in art was worked out by pupils.

15. At the end of the term all children in the class had their teeth attended to by the school dentist. The rating was 100 per cent perfect teeth in the class. The class doctor also reported to the nurse that the class was 100 per cent clean.

16. Each child found that he had some talent to contribute to help make the work a success.

which he keeps on a shelf for those who need to be braced by a stimulating philosophy to carry on with courage and good cheer.

To Contributors: — The editor of the School and Health Department will be pleased to receive articles dealing with the solution of concrete and practical health education problems in the school. Articles must not exceed 1,000 words in length. Stamps should accompany manuscripts to insure their return if rejected. All articles accepted will be paid for at regular rates. Address Editor of School and Health Department of HYGEIA, *67 Clyde Street, Newtonville, Mass.*

NEW HEALTH BOOKS
for teachers and pupils

YOU CAN MASTER LIFE

By James Gordon Gilkie. Price, $1.75. Pp. 186. New York: The Macmillan Company, 1935.

ALTHOUGH the author is not a physician or a trained psychologist his books are excellent for those who crave help for mental hygiene problems. Among the chapters in this volume are Conquering the Sense of Insignificance, Breaking the Grip of Worry, The Secret of Getting a Lot Done, Managing Personal Antagonisms and Gaining Courage to Endure. The reviewer will add this volume to others

PHYSICAL DEFECTS—THE PATHWAY TO CORRECTION

Pp. 171. New York: American Child Health Association, 1934.

FOR forty years the idea has been growing that schools have a responsibility for the health of their pupils. Most school systems have some sort of health program. In such a health program the medical examination of the children has been regarded as one of its fundamentals. Nevertheless school authorities have realized that in spite of such examinations many severe defects are not corrected. Such defects go without attention because they are dropped out of official sight. They are lost in the crowd. Often there is a record card on which the defect is noted, but for some reason neither the teacher nor the nurse knows anything about the case or why nothing has been done. This neglect is due to faulty organization.

The belief that money was being spent for medical examinations without adequate returns led to an investigation of physical defects among school children in New York City. This study was financed by the Metropolitan Life Insurance Company. As a result certain changes were suggested in the health program of New York City. These suggestions for improvement would doubtless apply to other communities, especially to the larger urban centers.

It is impossible to consider in detail the conclusions reached by this study. There is one suggestion that merits careful consideration. Since the teachers are the largest professional group within the school and closest to the child the teacher should be used to the utmost of her capabilities in the health service program.

This excellent study with its careful canvass of facts should be a challenge to all those who are responsible for the health examinations of school children.

THE TEACHER AND THE PUBLIC

Price, $1. Pp. 240. Washington, D.C.: National Education Association, 1934.

NEARLY a hundred years ago Horace Mann emphasized the necessity of enlisting the interest of the public in our schools. He said: "The nature of education must be explained. We cannot drive our people up a dark avenue, even though it be the right one; but we must hang out the starry lights of knowledge about it and show them not only the directness of its course to the goal of prosperity and honor, but the beauty of the way that leads to it."

If the enlightenment of the public was necessary in those days when community life was simple, when the purpose of the school was easily defined and the contact of the teacher with the parents was close, how much more necessary is the cooperation of the public today. The aims and methods of modern education need to be interpreted to parents and the general public. This is especially true of health education.

This excellent yearbook is adapted to the use of classroom teachers. It has been developed in response to the need of teachers for practical guidance in educational interpretation. The book tells why the public needs to be told about the public schools, what information should be given and how it should be told. The use of such facilities as the press and radio are considered in detail. There is an excellent bibliography. Various tables and graphs help to make the book readable.

THE JUNIOR SAFETY COUNCIL

A HANDBOOK FOR THE SCHOOLS. Price, 35 cents. Pp. 72. New York: National Safety Council, 1935.

THE new education is placing more and more responsibility on children. They are learning under careful guidance how to work together for their individual welfare and that of the school group to which they belong. Junior safety organizations offer an unusual opportunity for socialization not provided by the usual school curriculum.

This handbook on junior safety councils gives many practical suggestions on their organization. It is filled with much practical information which almost any teacher would find worth while. The chapters on the home room safety clubs would be interesting to teachers of almost any grade.

New Books on Health

THE WORLD BOOK ENCYCLOPEDIA

Nineteen volumes. 1934 Edition. Cloth. Price, $66; also terms. Pp. 7,990. New York and Chicago: W. F. Quarrie & Co.

THIS IS an encyclopedia developed especially for children of grade school and high school age. In its preparation the publishers have been exceedingly careful to select contributors who are authoritative and who understand how to write for readers of this character. The book is illustrated with some thousands of pictures, many of them in colors. Among the authors of medical contributions are Drs. W. A. Evans and Morris Fishbein. The range of the material is extensive so as to make the volumes especially useful as reference books in the home. The material is quite up to date, with articles on such contemporary topics as the New Deal and the social security legislation.

MORRIS FISHBEIN, M.D.

THE SOCIAL WORKER IN THE PREVENTION AND TREATMENT OF DELINQUENCY

By Margaretta Williamson. Cloth. Price, $2.50. Pp. 236. New York: Columbia University Press, 1935.

THIS IS the fifth and final volume in a job analysis series published by the American Association of Social Workers. It is a detailed analysis and discussion of probation and parole, and the prevention of delinquency. The relationship of probation to parole and the differences between them are outlined, and there are chapters outlining the duties of probation officers, supervisors, parole officers and executives. Similar discussions of the functions of protective agencies for the prevention of delinquency are found in Part II of the book, with special sections devoted to Big Brother and Big Sister and Policewoman services. Of special significance to social workers, the book should not be without interest for those whose work brings them in contact with the courts and other agencies dealing with delinquencies, punishment, parole and probation.

W. W. BAUER, M.D.

THE MATERNITY AND CHILD WELFARE MOVEMENT

By G. F. McCleary, M.D. (Cantab.), D.P.H. Price, 7s.6d. Pp. 227. London: P. S. King & Son, Ltd., 1935.

TO HIS recent volume, "The Early History of the Infant Welfare Movement," the author adds this book which brings up to date his historic consideration of the development of child welfare. The title of this book is significant in that it includes the question of maternal health, which logically and actually is inseparable from child health. His primary interest is in the child welfare movement in England, and he pays even less attention to American developments in this book than he did in the earlier volume, in which there was a chapter on developments in America. Since, however, the English movement is his topic this is not unfavorable criticism. He devotes chapters to the origin of the maternity and child welfare movement; its progress during the World War; the growth of "health visiting," which we call public health nursing; the maternity and child welfare center; prenatal care; the unmarried mother and her child; the unwanted baby; the preschool child; state recognition of midwives; maternal mortality and morbidity; the new attack on infant mortality, and the administration of maternal and child welfare service in the British Isles. Of particular interest are the chapters on maternal mortality and morbidity and those relating to midwives. He sets forth the advantages and disadvantages of the various legislative acts and appraises the progress of the movement with what seems to be an eminent sense of fairness. He appears to be a proponent of greater participation in welfare service by governmental agencies. Of particular interest to American readers will be his enumeration of the failures of health insurance to go as far in providing for maternal welfare as the author thinks should have been done.

W. W. B.

METHODS AND MATERIALS OF HEALTH EDUCATION

By Jesse Feiring Williams, M.D., and Fannie B. Shaw, M.A. Pp. 331. New York: Thomas Nelson and Sons, 1935.

THIS BOOK should be extremely helpful to the teacher. Not only is the material authentic, but the conception of the child as a developing organism, a receiving organism, a responding organism and a unified organism is wholly in accord with modern conceptions of education. The book contains a great wealth of teaching material which is so well organized that teachers should have no difficulty in using it. The plan of the chapters is orderly and logical, and the questions for study and discussion should be of considerable aid to the teacher. The book deals in turn with definitions, the nature of the child, healthful school living, the official and nonofficial organizations, construction of the curriculum, health instruction, materials for teaching health, tests and measurements in health education and last, but by no means least, the health of the teacher. The definitions are particularly good, and so are the bibliographies and the index.

W. W. B.

[NOTE.—Books reviewed or mentioned on this page, other than those published by the American Medical Association, should be ordered from booksellers or direct from the publishers. They may not be ordered through HYGEIA or the American Medical Association.]

MODERN HOME MEDICAL ADVISER

Edited by Morris Fishbein, M.D., Price, $7.50. Pp. 905. Illustrated. New York: Doubleday, Doran & Co., Inc., 1935.

FOR MANY years, attempts have been made to furnish some sort of a medical book that would be useful in the home. The earlier efforts were unsuccessful because they were essentially attempts to write medical textbooks for use in the home. They were foredoomed to failure. This volume is planned, according to the introduction, to answer questions concerning all the common and some of the extraordinary illnesses that may develop in any family and also to be an adequate guide to hygiene and first aid. The book has been written in part by the editor, Dr. Morris Fishbein, and contributions have been made by twenty-three other outstanding American physicians. There are chapters devoted to the choice of a physician, the family medicine chest, first aid, hygiene of women, sex hygiene, care of the expectant mother, care and feeding of the child, infant hygiene, infectious diseases, transmissible diseases, respiratory diseases, rheumatism, arthritis and gout, heart disease, digestive diseases, kidney diseases, the blood deficiency diseases, allergy, the glandular system, diabetes, blood pressure, cancer, industrial hazards, the skin, the eye, ear, nose and throat, the venereal diseases, the teeth, diet, posture, the foot, nervous and mental diseases, and old age. The book is written in a style which the nonmedical reader can readily comprehend. Enough information is given to satisfy any normal interest in health and hygiene, but the book does not offer material for satisfying morbid curiosity which leads to no desirable improvement in appreciation of health and hygiene.

Color plates show the principal features in the anatomy, or structure, of the body, and there are many line cut and halftone illustrations. The numerous iliustrations are well explained with adequate legends. In spite of the fact that the book is a volume of more than 900 pages, it is not bulky. It is attractively printed and handsomely and substantially bound. The book is so comprehensive that it is impossible within the bounds of space here available to make any detailed comment on the various chapters. The index alone fills fifty pages and is unusually convenient and complete. Suffice it to say that particular attention is given to common home problems; for example, how to choose a doctor, first aid for minor accidents in the home, and such common difficulties as thumb sucking and nail biting. The scientific standing of the authors assures authenticity. The editor has had a vast experience in interpreting medical science to the public, which is evidenced in the clarity with which the scientific facts are presented in this work.

There can never be a book which supplants the doctor. One of the principal virtues of this book is that it does not make any such attempt but emphasizes again and again the importance not only of consulting the doctor but of consulting the family doctor first before seeing specialists or seeking to tread unaided the complicated paths of modern medical and allied sciences. This book will be a useful addition to any home library. More than that, it should also be of great service in the reference libraries of secondary schools and colleges where it may be made accessible to the students. In the elementary schools it will be useful to the teachers and perhaps to some of the older students. Community public libraries will find in this book a useful answer to the growing demand for health education on the part of their clients.

W. W. B.

HEALTH PROTECTION IN THE U. S. S. R.

By N. A. Semashko. Price, $1.75. Pp. 176. New York: G. P. Putnam's Sons, 1935.

HEALTH PROTECTION in the U.S.S.R., if one believes everything one reads in these pages, is of Utopian quality. All czarist statistics are unreliable, and all soviet statistics are simon pure! The author, who had a large share in the development of Red medicine as the People's Commissar of Health, in this volume places the seal of his own approval on his own work. The seriousness with which this volume can be taken should be obvious. Nevertheless, it is worth reading because it exemplifies the kind of material that is accepted as true by those with a sufficient will to believe.

W. W. B.

PAYING THROUGH THE TEETH

By Bissell B. Palmer, D.D.S., F.A.C.D. Cloth. Price, $2. Pp. 297. New York: The Vanguard Press, 1935.

ACCORDING TO the subtitle, this is "a critical analysis of dental nostrums." The description is apt. Dental nostrums are described by name, and their shortcomings are pointed out without fear or favor, quite obviously on the basis of exact knowledge. As in some other works of similar character dealing with medical nostrums, severe criticism is leveled at the exploitation of the public carried out by means of scare-advertising that is calculated to arouse fears of deplorable consequences if somebody or other's proprietary product is not used with regularity; the advice to see the dentist, which is often thrown in, is characterized as an insult to the dental profession. The work of the Council on Dental Therapeutics of the American Dental Association is described, and tribute is paid to the pioneering of the American Medical Association Council on Pharmacy and Chemistry. Unlike authors of certain other books of superficially similar character, Dr. Palmer does not seem to find it necessary to attack reputable organizations which have not agreed in toto with the author's opinions. Of the books which "name names," this is no less vigorous than others, but it is at the same time more temperate and should therefore be more effective. Dentists, of course, will find it vastly useful, but so should physicians. Those engaged in health education should not be without it.

W. W. B.

DIRECTORY OF SOCIAL AGENCIES OF THE CITY OF NEW YORK, 1935

Prepared by Committee on Information Services of the Welfare Council. Jessica H. Barr, editor. Cloth. Price, $3. Pp. 512. New York: Columbia University Press, 1935.

THIS IS the forty-first edition of this directory. The fact that New York is the location of the central office for many agencies of national rather than local scope makes this directory useful to agencies interested in health and social service even though they may be located elsewhere. Names, addresses and brief descriptive paragraphs of the ostensible purposes of the organizations furnish a general guide to the character of the agencies listed. Inclusion does not imply endorsement, nor does omission necessarily imply disapproval.

W. W. B.

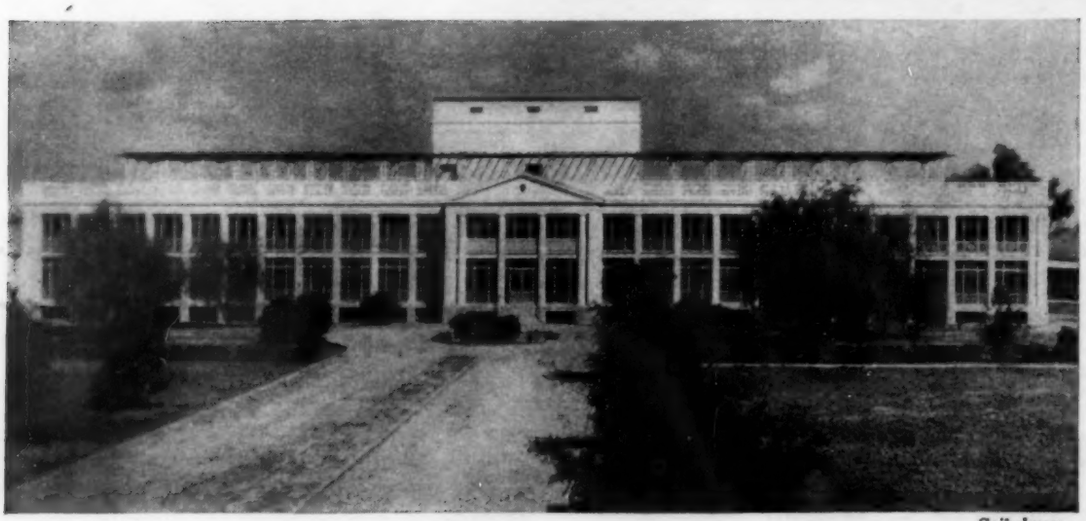
THE PADDLE-BALL, A NOVEL GADGET RECENTLY INVENTED, IS EXPECTED TO BE OF GREAT AID IN TEACHING SWIMMING.

Acme

THIS SIDEWALK DRUG STORE IN MEXICO HAS ARMADILLO SKINS, BITS OF ALLIGATOR HIDE AND SHARK SKIN, CHARCOAL AND A VARIETY OF HERBS AND WEEDS, ALL OF THEM FAMED AND ANCIENT REMEDIES AMONG THE INDIANS.

HEALTH SLOGANS AND DRAWINGS HAVE BEGUN TO APPEAR ON MILK BOTTLES DELIVERED DAILY IN COLUMBUS, OHIO. MISS BETTY REID, DIRECTOR OF THE COLUMBUS MILK COUNCIL, HAD THE IDEA.

Acme



THE LEPER COLONY IN CARVILLE, LA., HAS A NEW HOSPITAL, BUILT WITH FUNDS OF THE PWA TO BENEFIT 350 LEPERS.

Soibelman

QUESTIONS AND ANSWERS

Hydrocephalus

To the Editor:—I have a baby girl, 2 years old, who has never walked. When she was 9 months old her head began to grow until it was 27 inches in circumference, larger than a grown person's head. It has not grown any more since that time. The baby is in perfect health otherwise. She is bright and jolly, and she talks, sits alone and is beginning to want to walk; but her limbs are too weak to carry her. Can anything be done for her?

E. M. W., Arkansas.

Answer.—Occasionally hydrocephalus, which seems the most probable diagnosis in this case, cures itself. As the head has not grown since the age of 9 months, it seems quite probable that this has happened. At times, hydrocephalus, while not actually cured, is arrested and grows at a slow pace.

The impression that hydrocephalus cannot be cured should be corrected. Cures do not always result from surgery, but an operation must be performed in the early stages in order to prevent the enlargement of the head and the consequent destruction of the brain. It is only occasionally that nature steps in and cures the mechanical barrier, as has possibly occurred in this case.

Poisonous Gases

To the Editor:—A young man, aged 21, employed as a welder, is engaged in welding sheet metal that has been previously coated or galvanized with zinc. During the process of the welding, which is continued until the coating is burned off, a gas is formed which causes dizziness when inhaled. Can this condition seriously affect his health now or in later years?

G. F. Y., New Jersey.

Answer.—It is not stated whether the welding is electric, oxyacetylene, oxyhydrogen, or of some other type. However, numerous poisonous gases may arise from three possible sources during welding; namely, the welding rod, especially its coating; the materials welded, including their impurities, and the decomposition products of the air itself under the conditions of oxidation or reduction at the high temperatures which prevail.

In the present case the single symptom of dizziness, if this is the only one, might be due to one or more of several gases, not excepting carbon monoxide. Usually other symptoms appear, some of which may be severe.

The composition of welding rods is usually kept secret, but some are known to yield poisonous gases. Zinc fumes produce the commonest known type of metal fume fever, an ague-like syndrome, coming on an hour or so after exposure and accompanied by dryness of the respiratory membranes. The condition usually ends over night without after-effects. Under the conditions present, some metals, especially zinc, may contain arsenic and produce arsine, which in sufficient amount is one of the most rapid blood destroyers known. This is evidenced by rapid prostration and acute jaundice. Phosphine gas is another rare possibility, arising from the phosphorus present in some alloys. Obnoxious sulfur compounds may also arise. Obviously, any poisonous metals being worked on may yield volatile products to be inhaled. The action on the surrounding air may produce nitrogen oxides and possibly ozone. The former may be deadly toxic when inhaled in even small amounts, leading possibly to a fatal pulmonary edema and bronchopneumonia.

Safety lies in good ventilation on the job or in wearing a fresh air hose mask. Most severe cases have resulted from welding in close quarters.

Water Softener

To the Editor:—We are living in a community where the water is very hard, making it necessary to use a large amount of softener in water used for cleaning purposes. Recently I was shown a compact faucet attachment softener which is said to soften the water so that it may be safely used for both cooking and drinking. This apparatus contains a chemical. After some 90 gallons of water have been softened, the device must be flushed with a salt solution. Will water so softened be safe for drinking?

Mrs. A. M., California.

Answer.—The softener mentioned is of the so-called zeolite type. This softener changes calcium and magnesium salts to the corresponding sodium salts. The total concentration of these salts must be small, or the water would not be palatable in its original hard condition.

Since there are a number of municipal water supplies in the United States which treat water by the zeolite process and distribute it to their citizens for all general purposes, there can be no question as to its effect on health.

The owner of a zeolite water softener should be as careful in handling the salt for regeneration as he would be in preparing food; that is, he should avoid introducing dirt of any sort. Discounting inexcusable carelessness in this respect, there is no apparent reason for questioning the potability of water softened with zeolite.

Electrocoagulation

To the Editor:—Would the electric coagulation treatment of cancer be likely to effect a permanent cure after an operation for an advanced breast cancer? My mother recently underwent an operation for a cancer of the left breast. She is now being given x-ray treatments. Would the electric coagulation treatment be more effective, or is x-ray treatment the best that can be done in this case?

M. L. D., Minnesota.

Answer.—Electrocoagulation has been recently advocated in the treatment of certain forms of carcinoma of the rectum. It is generally not employed for the treatment of breast cancer after an operation. The use of the x-rays after an operation for cancer of the breast is the accepted method of treatment. Electrocoagulation is not indicated in such a case.

If you have a question relating to health, write to "Questions and Answers," HYGEIA, enclosing a three-cent stamp. Questions are submitted to recognized authorities in the several branches of medicine. Diagnoses in individual cases are not attempted nor is treatment prescribed. Anonymous letters are ignored.

Compressed Air and Deafness

To the Editor:—Are persons working under compressed air subject to deafness? What are the symptoms? Is there a cure for such deafness? Do all men working under compressed air in caissons suffer from deafness? Do such men first lose their ability to whistle or speak or do they first become deaf? Do they notice their hearing failing?

B. M., Pennsylvania.

Answer.—Men who work in caissons or other places under compressed air are of course subject to all the ear troubles to which the general population is exposed. In only a small proportion of these men do ear troubles peculiar to their occupation develop. When the trouble is due to the compressed air it always comes on suddenly; but when it is due to the noise sometimes associated with such work, as in the case of rock drillers, it comes on gradually, just as in boilermakers or locomotive drivers who do not work in compressed air.

The ear troubles directly due to the factor of compressed air may be divided into two general groups. The first group comprises those directly caused by the development of large differences in the air pressure in the middle ear and in the outer ear; these troubles are always due to the failure of equalization of pressure through the eustachian tube, a passageway which connects the cavity of the middle ear to the throat.

In the normal person this small tube opens each time that a swallowing movement is made, and this permits adjustment of pressure in either direction. But many persons when they have a cold or a sore throat have an associated congestion of the mucous membrane of the eustachian tube, so that there is not a free communication during swallowing; and there are many persons with a chronic inflammation of this passageway. Whenever, during either the compression or the decompression period, the air in the middle ear is not able to equalize its pressure with that of the surrounding air by the natural route, there is danger of rupture of the tympanic membrane, or drum-head; and, whether or not the tympanic membrane ruptures, there occurs a severe congestion of the blood vessels of the mucous membrane of the middle ear, sometimes to the point that blood escapes from them. The symptoms noticed are pain in the ear, a feeling of fulness in the ear, a "dulled" hearing, sometimes a little bleeding from the ear or into the throat and sometimes a slight feeling of dizziness for a moment as the pressure adjusts. Unless the ear becomes infected or an old infection is already present, the tympanic membrane heals over and the congestion clears up in a few days with little, if any, permanent damage to the hearing. But if an infection occurs, then the end-result is subject to the same possibilities that are present in any case of otitis media.

The prevention of this group of ear troubles is entirely possible by careful medical supervision. No one should be employed whose eustachian tubes are not normal or who has a disease of the middle ear, and those employed should not be permitted to work on days when they have a cold or a sore throat.

The second group of ear troubles that are directly due to the factor of compressed air is the more serious one. The symptoms always begin during or soon after decompression and are caused by too rapid lowering of the air pressure. The basic trouble is doubtless the same as in the condition known as caisson workers' disease, or the bends, which is due to the formation of free bubbles of gas in the blood and other body fluids. When the pressure is lowered too rapidly there is not time enough for the escape of the extra amount of dissolved gas, and free bubbles form wherever this dissolved gas happens to be located. While no one has actually observed such bubbles present in the fluids of the inner ear or in its blood vessels in patients with this condition, yet there is little doubt that this is what occurs. Certainly it offers an excellent explanation of the severe symptoms these patients have: a very severe loss of hearing, which may be for all sounds or may be worse for some sounds than for others, and frequently a severe vertigo, which may be accompanied by active nausea. In some patients the symptoms clear up after prompt recompression followed by a slow decompression; in others there appears to be from the first a permanent damage to the nerve endings in the inner ear. There is no treatment which will restore the delicate nerve endings in the inner ear, no matter what condition has caused the original destruction.

The second group of ear troubles cannot be prevented by medical supervision of men previous to employment or before going to work for the day; the only prevention is slow decompression every day.

The loss of ability to whistle is more common than the loss of ability to speak when working under compressed air conditions, but the reasons for these difficulties have nothing to do with hearing troubles.

Whooping Cough Vaccines

To the Editor:—Please give me information regarding the use of serum for immunization against whooping cough.

M. Y., Pennsylvania.

Answer.—The use of vaccines for immunization against whooping cough is not particularly new. Vaccines have been used for this purpose for a number of years, and there has been a general feeling that probably they prevent some cases of whooping cough; but no one has been able to prove whether or not they do. Please note that these preparations are vaccines, not serums.

Within the last few years there have been some new experiments in whooping cough vaccines which seem to offer better chances of success than older methods have promised. The two points in which the new preparations differ from the older ones are that the doses are larger and the preparations are made from freshly isolated strains of whooping cough bacilli. The Council on Pharmacy and Chemistry of the American Medical Association has not accepted any of the new whooping cough preparations for inclusion in its annual publication "New and Nonofficial Remedies."

Headache Remedy

To the Editor:—Which headache remedy do you recommend?

C. M. Z., Wisconsin.

Answer.—The only headache remedy recommended by HYGEIA is a prescription from the family doctor, given after careful physical examination and study of the patient's hygienic habits. This prescription may include changes in the diet, habits of living or habits of elimination. It may include a change in the habits of using the eyes, or it may involve the fitting of glasses. It may simply advise the patient to "slow up" and get rid of the hurry and high tension anxiety which keep the nervous system constantly keyed up. It may include instructions for the removal of a badly infected set of tonsils or a tooth which has become abscessed. It may involve the elimination from the diet or environment of certain substances which after examination and testing are found to produce headaches of the so-called migraine type. It may even include a prescription in the ordinary sense of the word for drugs to relieve the pain, but only as a last resort.

It is not as easy to apply this headache remedy as it is to purchase a box of pills, but it is far more logical and infinitely safer, and it is the only headache remedy HYGEIA is able to recommend.

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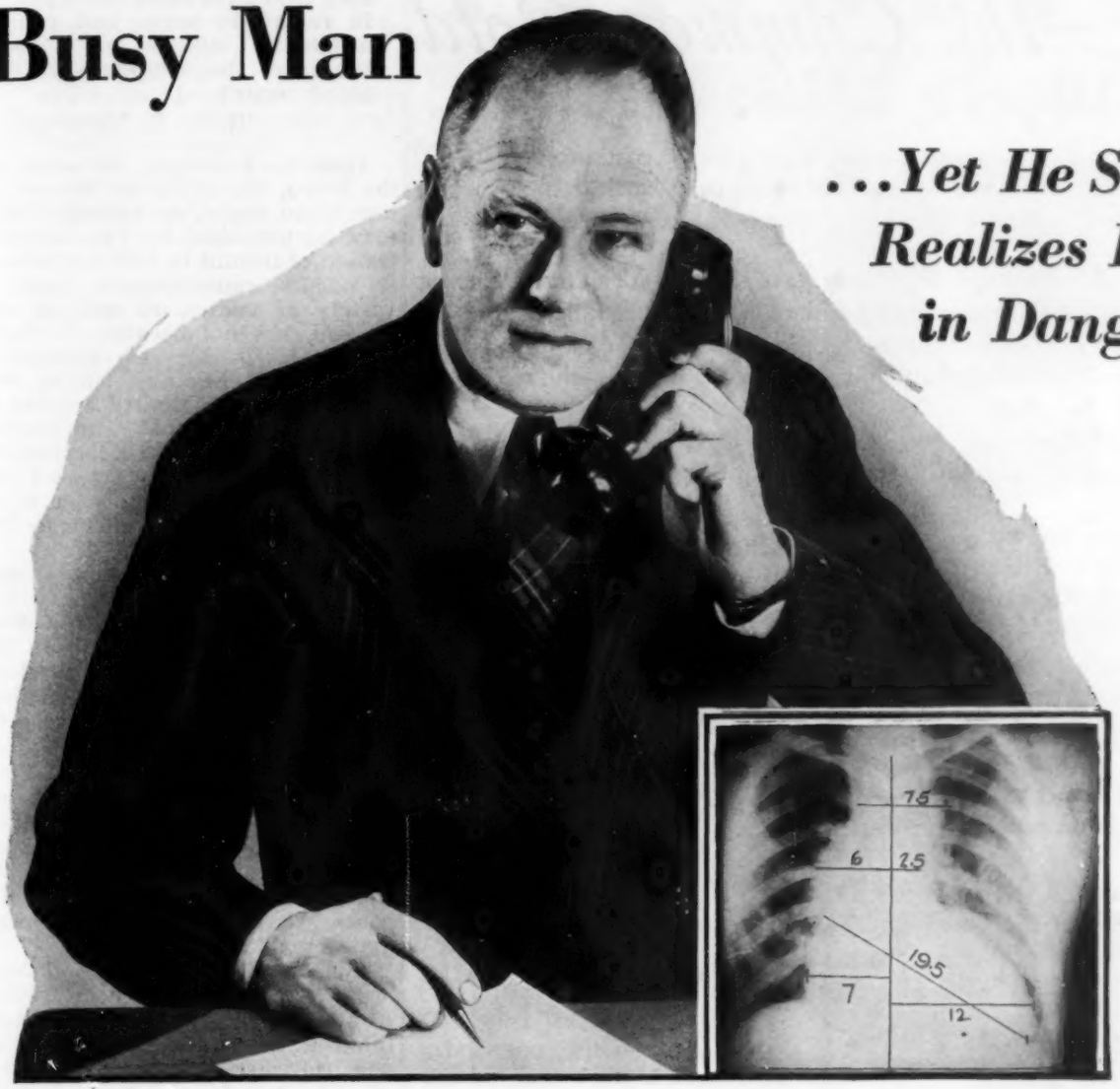

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The best time to prevent serious trouble is at the very beginning. The moment your nose begins to run, your throat feels sore, your eyes burn and your back begins to ache, or your head stops up—organize your counterattack on Health Enemy No. 1.

Take no chances. Stay at home. Rest in bed. Stay away from other people—colds are often contagious. Drink plenty of water and eat lightly of simple, nourishing foods. If there is no improvement in your condition the next day, call the doctor. If you are feverish, send for the doctor at once. Do not ignore a cold no matter how trifling it seems. If you take proper care of yourself from the first sniffle, it will not, in a great majority of cases, develop into a serious illness.

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Low Blood Sugar Level

To the Editor:—What are the dangers, if any, in low blood sugar in normal persons, particularly persons who have some idiosyncrasy in regard to sugar and cannot metabolize starches or sugars? What are the symptoms of low blood sugar?

H. W. S., Minnesota.

Answer.—Deficiency of sugar in the blood, the condition known as low blood sugar, or hypoglycemia, may be provoked by the administration of insulin in sufficient doses. It occurs spontaneously from a variety of causes, as will be described, but not because the individual is unable to metabolize (digest) starches and sugars and therefore takes a limited amount of starches and sugars. The normal body is provided with a mechanism which maintains the level of the blood sugar at normal, even when no sugar is entering through the intestinal canal.

Spontaneous hypoglycemia may be produced by tumors of the insulin-making tissue of the pancreas; by insufficiency of the suprarenal glands whose product, epinephrine, functions antagonistically to insulin, in some cases by tumors of the interbrain and pituitary gland, and in others by functional disturbances of the nervous system. In addition, a few cases have been described in which primary or secondary disease of the liver, either cirrhosis or extensive cancer, has been associated with hypoglycemia.

The symptoms of low blood sugar are weakness, tremor, perspiration, disorientation and finally unconsciousness. The condition is serious, because if unconsciousness persists for longer than twenty-four or forty-eight hours, irreversible changes may occur in the nervous tissues, particularly in the brain, and the patient may die. The normal level of the blood sugar varies between about 0.7 and 1.5 or 1.6 per cent. The level at which symptoms of hypoglycemia become manifest differs in different individuals. The treatment of the condition depends on the cause. Patients who have tumors of the pancreas have been cured by the removal of these tumors. Patients in whom the condition is produced by nervousness and those in whom other causes of the disease are evident can be temporarily benefited by appropriate adjustments of the diet. The immediate remedy in the emergency of extremely low blood sugar is the administration of dextrose in one form or another, either by mouth or by vein.

Do You Know—

1. The worst example of quackery practiced in our generation? *See page 24.*

2. That death from asphyxia is twice as frequent as death caused by automobile accidents? *See page 32.*

3. That census figures reveal a gradually diminishing predominance of males in the United States after the age of 55? *See page 22.*

4. What steps led to the discovery that vitamins are essential to the cure of rickets? *See page 40.*

5. Three suggestions for earlier detection of syphilis? *See page 50.*

6. Why the traveler must choose his lodgings with scrupulous care? *See page 64.*

7. The conditions that necessitate mouth reconstruction? *See page 43.*

8. Why it is unwise to ask for all the details of the actual result of a physical examination? *See page 61.*

9. How concepts of the cure of special disease conditions have changed within the past few years? *See page 12.*

10. What a gland is? *See page 34.*

11. One way of detecting early physical changes toward the abnormal? *See page 7.*

12. The difference between mastoid and mastoiditis? *See page 48.*

13. That dolls are probably the oldest of all toys? *See page 29.*

14. That a child's "indisposition" is often a tempting escape from poorly prepared lessons, examinations or unattractive social obligations? *See page 56.*

15. Why the personality of the child is an important factor in regard to the time of his maturity? *See page 58.*

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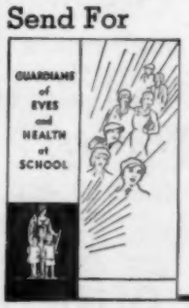

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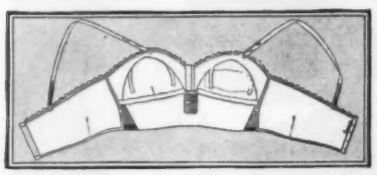

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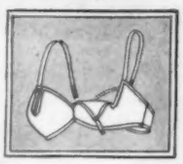

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LADIES AND GENTLEMEN: YOUR HEALTH!

DOES ILLNESS BEGIN AT FORTY?

(Continued from page 11)

of the hardened vessels. Nevertheless, heart and kidney disease as well as high blood pressure may be entirely independent of hardened blood vessels. Many "acute indigestions," incapacitating backaches, headaches, or even paralyses after middle life may be manifestations of heart, kidney or vascular disease. The onset of these ills can no doubt be dated many years prior to the appearance of symptoms. The rush of daily routine, worries, insomnia, hurriedly chewed and badly digested meals, excessive smoking and drinking, all the exciting activities in which youth revels must be governed by the state of well being of the individual organs of the body and not by the whole organism, because the person as a complete being is so well developed that he is able to compensate temporarily for organic deficiencies. He may go on sacrificing health for ambition and the desire for prestige and wealth; he may achieve so-called success and then be lost to his family and self through poor health, invalidism or death. On the other hand, he may heed the warnings of his physician and reward himself with a longer, more healthful and by all means, happier life after 40.

The mere extension of life beyond 40 is valueless without a simultaneous extension of health. In the competent periodic examination lies the solution of the greater part of this problem. If periodic health examinations are begun early in life many illnesses may be avoided or at least postponed, and many of the unnecessary discomforts of old age can be made things of the past. The success of a periodic examination, however, depends entirely on the thoroughness and knowledge of the examiner. The examiner can be aided by knowing which diseases are most likely to affect the different constitutional types of patients. For example, the short, broad person, known as the pyknic type, seems more predisposed to such diseases as diabetes mellitus, obesity, arteriosclerosis, chronic arterial hypertension, rheumatic diseases and, in the mental sphere, manic depressive psychoses. The tall and slender or asthenic type seems predisposed to undernutrition, persistently low blood pressure, tuberculosis, visceroptosis, or dropped organs, and among mental ills to dementia praecox. The importance of such knowledge in preventive medicine cannot be measured.

Acute infections and contagions are less likely to be significant after 40 than are faulty or poorly balanced diets, general wear and tear of the entire body, and associated degenerative changes with individual organs. Most of us realize the iniquity of excess weight, for instance, but we may continue to ignore it during our active years without realizing that at 40 and thereafter the period of inactivity gradually begins, which will certainly not help to reduce weight. It is difficult to understand why so many of us wait for the development of disease before taking the necessary treatment after a bad tooth has been allowed to remain in order to prevent slight facial asymmetry. That indiscreet act at 25 or 30 may mean many decayed teeth or even artificial sets of teeth at 40. In the meantime the possession of that one bad tooth may date the onset of arthritis or some other chronic disease for which many teeth will need to be extracted later. It should be obvious that whisky and other alcoholic stimulants, taken immoderately, lead to serious disease of the arteries, liver or nervous system. Why then do so many of the younger generation, supposedly sensible, continue to be intemperate? Intemperance, especially in the quantity of food, is such a general habit that both young and old fail to realize the degenerative disease changes that are attributable to it.

Medical colleges, it has been predicted, will establish intensive courses in senescence; that is, the study of methods to defer the onset of senility and to retain maximum efficiency for a substantial period beyond the fourth decade. What ultimate success can be expected, however, in view of the prevalent inability to abide by simple rules for maintaining health? The means are at hand for preventing and controlling many diseases, but many persons continue to allow disease to appear in the belief that they can easily be cured. Prevention is infinitely more important than cure because at the present stage of our knowledge the former is in most cases attainable, while the latter is at best only controllable. If life is to "begin at 40," if there is any secret to health after 40, it is to be found in the adequate care and prevention of illness before that age. Furthermore, if the physician is to bestow the greatest good on the public, the public must cooperate to a greater extent than ever before in the detection and early treatment of apparently minor disturbances.

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Home school for nervous, backward children. *Best in the West.* Beautiful buildings. Spacious grounds. Experienced teachers. Individual supervision. Resident physician. Enrolment limited. Endorsed by physicians, educators. Booklet. E. Haydn Trowbridge, M.D., 1810 Bryant Bldg., Kansas City, Mo.

AIR CONDITION Your Home
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This method is approved by Boards of Health. As effective during heating season as installations costing hundreds of dollars.
SAVO AIR MOISTENERS
Keep air moist; more healthful. An amazing complexion aid, because it avoids drying out of skin surfaces. Quickly saves cost in heating bills. Used in thousands of homes and offices with radiators or hot air registers. No upkeep expense. Guaranteed. Write for Free catalog.
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U. S. Pat. 1,702,922—Invented by Mme. Poix to create the stylish upward contour; to relieve pain and remove cause of many bust troubles; also for pre-natal and nursing periods.

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Mercerized Repp.....$1.00
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If not at dealers, order direct giving exact bust measure next to skin. Booklet free on request.

G. M. POIX, Inc.
103 Madison Ave.
New York, N. Y.

GROWING CHILDREN

may need this

Ultraviolet Irradiation

Your doctor will tell you that sunshine plays a mighty important part in the health of your children. Sunshine gives them Vitamin D which helps build strong bones and sound teeth.
But when the sun does not shine and indoor play becomes necessary for a single day—or for many days at a time, what then? The HANOVIA Home Model Alpine Sun Lamp will take the place of the sun at any time in activating the Vitamin D that your son or daughter may need. Only a few minutes a day in your home is all that is necessary.
Your medical supply house, electrical supply dealer or department store will be glad to demonstrate this lamp.

Table Model, $99
F. O. B. Newark, N. J.
Accepted by the Council on Physical Therapy of the American Medical Association
Write for descriptive Booklet to

HANOVIA
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Dept. 44-A, NEWARK, N. J.

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Mention HYGEIA when writing to Advertisers

CHILD'S MUSICAL TRAINING SHOULD BEGIN DURING INFANCY

Since the basis of all music is rhythm, there is no better way to start a child's musical education than by giving him a wealth of rhythmic experiences soon after he has learned to walk and talk. This statement appears in *The Parents' Magazine*, emphasizing the fact that an early musical background will greatly increase the value of later musical study.

The introduction to music should be both informal and spontaneous on the part of the parents. No mother needs to be told that her child enjoys muscular activity. He runs, jumps, claps and skips naturally. When coupled with bright, attractive music and guided by the parent, these activities for the preschool and older child increase in value and interest.

Another natural outlet that may be utilized in developing rhythm consciousness is the love that children have for games of make-believe. Little Peter who has seen an airplane take off and soar through the sky may find great pleasure in being an airplane himself, gliding rhythmically with outstretched arms as he listens to suitable music. Such rhythmic experiences should be so satisfying and enjoyable to the child that he will want more, and the mother who supplies and stimulates them will be establishing the first aim of rhythmic education.

Stories told to music can be every bit as interesting as a tale told in the traditional manner. Classic music is full of gems which would have real significance for the child mind. Many illustrative compositions have been written portraying the small child's world of fairies, giants, butterflies, brownies and flowers.

Children love to sing. For the mother who wants her children to love music, a portion of each day set aside to sing and play with them will be an excellent investment. She will discover that such a breathing space in a busy day will be both an inspiration and a joy to herself and the children.

Consequently the child is spending many happy musical hours; he is acquiring poise and personality; his early musical experience is giving him invaluable "ear training," and he is developing a lasting feeling for rhythm. To him, music will never be a burden that has to be endured because the parents demand it; rather it will be a part of his existence, an expression of his daily life and imagination that must be carried on to satisfy his own felt need.

Mothers!
Save 48% Time Dressing Baby the Vanta Way

Ask your dealer for VANTA Baby Garments made with the patented NOBELT process, which provides a garment with no fastenings of any kind.

For baby's health, comfort and safety, VANTA is the first choice of thousands of doctors and nurses. Made always of finest materials and workmanship. And now this new VANTA achievement means another sensational advance for health protection with 48% less handling of baby in dressing!

Earnshaw Knitting Company
Newton, Massachusetts

Baby Garments
NO PINS—NO BUTTONS

Always a Good Move!

WHAT TO DO ABOUT HERNIA?
WHAT ABOUT HEART DISEASE IN YOUR CHILDREN?
SEE FEBRUARY HYGEIA
SEE FEBRUARY HYGEIA
HOW DO GLANDS AFFECT YOUR BEHAVIOUR?
SEE FEBRUARY HYGEIA

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THE HEALTH MAGAZINE

IS always a good move to make for health.

• HYGEIA is published by the American Medical Association to keep the layman informed on the latest health developments. Your health problems can often be quickly solved when you know the truth, and enlist the aid of a competent physician.

• HYGEIA is, literally, one jump ahead of your questions. Each month's supply of stimulating articles is written for you! The writers anticipate your questions, and give a practical answer to each of them.

• In your mind may be one of the questions above—or a similar perplexing one. Let HYGEIA bring you the answer. Mailing the coupon below is the right move to make for good health... Make it today!

Here's a Winning Move. 6 Issues of HYGEIA, for $1

AMERICAN MEDICAL ASSOCIATION
535 NORTH DEARBORN STREET, CHICAGO

Regular Price $2.50 a year

Please send HYGEIA for 6 months. . . Here is my dollar!

Name.....

Address.....

"LET THERE BE LIGHT"

Ten year old Buddy brought discouraging reports home from school, while sister Mary ranked high in her class. Buddy slaved over homework, and his mother thought he should learn his very simple lessons in school. "It must be the teacher's fault," she said.

Then one day the Parent-Teacher Association opened a sight clinic. It was found that Buddy had never seen the examples which the teacher wrote on the blackboard. In fact teacher was just a messy blob from where Buddy sat, not the nice trim figure she thought she was. Even the letters in Buddy's book all ran together in a muddy line instead of standing out, clear and black. Of course the child's eyes were immediately fitted with glasses.

By the time the children in this country grow up, one fourth of them have defective sight, according to information contained in a pamphlet written for the *Woman's Home Companion*. More than half of the adult population has faulty vision.

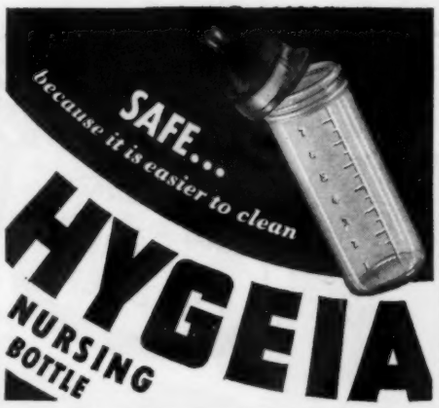
Suppose that 50 per cent of the total population were lame and were seen limping continuously on busy thoroughfares. What a to-do health and welfare workers would make! And suppose that one fourth of all school children had lost an arm or a leg. Wouldn't the child welfare agencies take action!

Eyeglasses, however, have become so commonplace that their wearers attract no attention. Only the actually blind man arouses pity. Yet the millions who wear glasses and the millions who don't but should wear them are carrying a definite handicap whatever their walk of life. Recurrent headaches, dizziness, nervous exhaustion, insomnia and hysteria can be traced to imperfect vision.

In colonial and pioneer days our forefathers followed simple and primitive pursuits mostly in the daylight. Our great-grandmothers did many of their household tasks, such as washing and candle dipping, in the open. The entire family, exhausted by stern labor, usually retired early.

Gradually family life moved indoors to work in factories and offices and stores. Homes contracted into apartments. Natural daylight was replaced by oil lamps and gas jets. When the great illumination gift, electricity, was discovered, men thought the seeing problem was solved. But they did not learn to use the new light intelligently.

Light is essential to sight. No matter how perfect is the vision, it is impossible to see in a room without light. It follows logically that the ability to see well and clearly varies with the amount of light. The established unit of measurement is the foot-candle. Everywhere throughout the indoor world, by day and by night, millions of persons read and work under intensities of illumination even less than 1 foot-candle. Herein, for instance, is found the reason for much of the fatigue, nervous tension and muscular strain written on the faces and in the health records of modern civilized human beings.



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SEX BEHAVIOR IN MARRIAGE
by CHARLES A. CLINTON, M.D.

AT last . . . a book of sex technique that treats the subject frankly and in detail without offending . . . A medical authority proves that it is possible to cast aside all pretense and false modesty and discuss the most important single factor in human life in an intelligent, instructive manner.

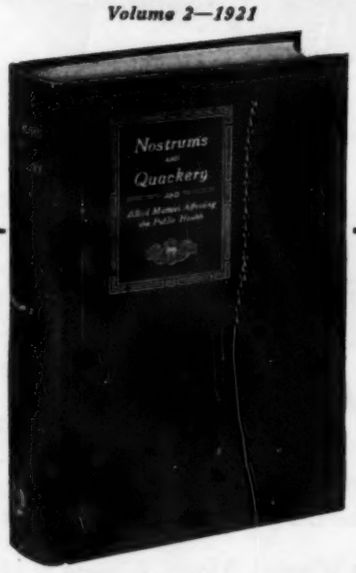
■ It is the purpose of this book to give exact instructions for marital procedure. . . . Dr. Clinton's long years as a physician and wide clinical experience merit your confidence.

■ Your name and address on margin brings you this valuable book C.O.D. Pay postman $2.00 plus postage. Money back in five days if not satisfied.

PIONEER PUBLISHING CO.
Dept. 10A1, 1270 Sixth Ave., Radio City, N. Y. C.

Nostrums and Quackery

Volume 2—1921



A volume which gives interesting and specific data on quackery and allied matters affecting the public health.

There are chapters dealing with Alcohol, Tobacco and Drug Habit Cures, Mail Order Concerns, Mineral Waters, Nostrums for Kidney Disease and Diabetes, Consumption, Deafness, Epilepsy, Female Weakness and Obesity Cures.

Order Direct

Over 800 pages. More than 500 illustrations

Price $1.50 postpaid

AMERICAN MEDICAL ASSOCIATION
535 N. Dearborn St. Chicago, Ill.

TO ADD LIFE TO YEARS AND YEARS TO LIFE

Life could truly begin at 40 if man would learn to prevent diseases that come with middle age, according to an article appearing in *Clearance.*

Eleven substitutes for business and social worries worth thinking about after 40 are:

1. One less hour of worry for one more hour of laughter.
2. One less week of high pressure living for one more week of restful vacation.
3. One less luncheon conference for one more midday period of relaxation.
4. One less evening of formal society for one more evening with a jolly book.
5. One less banquet for one more quiet supper with the family.
6. One less hour under the electric light for one more in the sunshine.
7. One less hour in the auto for one more swinging along on foot.
8. One less hour of work for one hour of physical examination by your doctor.
9. One less pound of body fat for one more of tougher muscle.
10. One less helping of meat for one more of vegetables.
11. One less cocktail for one more hour of sleep.

To make the most of dull hours; to make the best of dull people; to like a poor jest better than none; to wear the threadbare coat like a gentleman; to be out-voted with a smile; to hitch your wagon to the old horse if no star is handy—that is wholesome philosophy.

—Bliss Perry.

Edison worked eighteen hours daily perfecting the phonograph. He had said that genius was "an infinite capacity for taking pains," and that it consisted of "two per cent inspiration and ninety-eight per cent perspiration."

—The Hoosier Res-cuer.

ACCEPTED FOODS

This department is a useful guide in the selection of foods of quality, advertised with truthful claims. All products in this section as well as any others advertised elsewhere in HYGEIA stand accepted by the Committee on Foods of the American Medical Association, and are entitled to bear its "Seal of Acceptance." The foods listed here are but a portion of those accepted by the Committee. If you desire information regarding any other food product, you are invited to write to HYGEIA.

MOTHERS!

Not all Wheat Cereals carry this important seal of acceptance.
Be sure to look for it when you buy Cereal for Baby
Serve this new type Wheat cereal called Malt-O-Meal. Nourishing Wheat, easily digested. Flavored with Toasted Malt, hence makes a child want to eat the required amount.
For 4 servings Free to Try, write
CAMPBELL CEREAL CO. Minneapolis, Minn.

MALT-O-MEAL

PINEAPPLE AND PINEAPPLE JUICE
From HAWAII
ALEXANDER & BALDWIN, Ltd.
Honolulu, Hawaii, U.S.A.
Sales Office: 215 Market Street San Francisco, California

ASSURED HIGH QUALITY
C-H-B CALIFORNIA HOME BRAND
Tomato Juice
Tomato Catsup
Chili Sauce

OLD ANTIQUE
Pale Dry
Ginger Ale ◆ ◆ ◆

Clear and bubbling, zestful and refreshing. Old Antique is a ginger ale that will please you. When you order ginger ale, ask for Old Antique. Keep several bottles of it in your refrigerator — to be ready when you want it. For you'll want more, once you taste Old Antique.

Bottled by
The Better Bottler in Your City

Try Shopping Among HYGEIA Advertisements

THE RIDDLE OF THE BLOOD RELATION

(Continued from page 28)

might ordinarily be encountered, there wouldn't be any reaction."

"Now that's what I call quite a trick," said Carey.

"It is tricky," Trebor agreed. "It's very tricky, for that's only the general idea. There are a lot of special precautions which must be taken to prevent false reactions. I won't bother you with them, but don't forget that this sort of work has many pitfalls unless the fellow doing it knows his way around, as the boys say."

"It certainly would be annoying to be hung because somebody bungled a test like that," I agreed. "But will that test tell you absolutely whether or not a stain was *human* blood?"

"I don't know how you fellows feel about evolution," replied Trebor laughing, "but the only blood that will react with that test, that is, other than human blood, is blood from the higher apes, such as the gorilla, the chimpanzee and the orang-utan. Of course that doesn't constitute a practical difficulty under ordinary circumstances."

"Not unless the suspect works in a zoo," I grinned.

"That would certainly make it complicated," Trebor agreed.

"So that's how it's done," said Carey. "Just shows there's more ways than one to skin a cat. Isn't that another thing the boys say?" he grinned.

"Oh, that isn't all," replied Trebor. "There's still another method. I think it's a better one, too. It is just as delicate, perhaps even more so, and although it is still complicated it has a lot of technical advantages. It is called the complement fixation test and is the same sort of test we use for evidence of syphilis in the blood serum only it's applied somewhat differently. We needn't bother with the details, but it only goes to show that the laboratory has an answer for nearly all the problems put up to it."

"Well, I'll give it another," I said. "What can I call this story? We've talked about a lot of things—at least, you have."

"I know what we could call you, but we'll skip it," laughed Carey.

Dr. Phillips
CITRUS FRUIT JUICES
Recommended for Children
as a Source of Vitamins A, B and C

Dr. Phillips Orange and Grapefruit Juices and Grapefruit Hearts are uniformly rich in vitamin C and always full of flavor. Tree-ripened, they are canned fresh from the grove under the most modern scientific and sanitary conditions. Easy to serve at any time, anywhere. Get several cans today.
DR. P. PHILLIPS CO., Orlando, Florida

CALCIUM
IN DIETARY FORM

Plus PHOSPHORUS and the MINERALS of Milk with the Lactose to Insure Assimilation.
Derived entirely from milk.
Milk furnishes the most assimilable form of calcium.
MILK MINERALS CO., INC.
New York - Chicago - San Francisco

Try Heinz Double-Sure Strained Foods for Baby

You know Heinz quality in foods. You can have this same high standard in strained foods for baby. Insist on Heinz. Send for valuable baby diet book featured on page 96.
H. J. HEINZ CO., Pittsburgh, Pa.

HIGHLAND
100% PURE
Vermont Maple Sap Syrup
Packed by
CARY MAPLE SUGAR CO., INC.
St. Johnsbury, Vt.
"The Maple Center of the World"

LOUDON Brand
PURE
TOMATO JUICE
Delicious—Refreshing—Appetizing—Zestful
Brimming with Sunshine and Health
The Loudon Packing Company - - Terre Haute, Indiana

PLEASE MENTION HYGEIA WHEN WRITING ADVERTISERS

"What's a title or two among friends?" grinned Trebor. "If we had stopped with the paternity business we might have called this 'The Case of the Bachelor Father.'"

"Yes, but we didn't," I said.

"I'll say we didn't," Carey agreed.

"Well, then," said Trebor, "call it 'The Riddle of the Blood Relation.'"

(To be continued)

CARROTS

The carrot is important in the diet because it is a rich source of vitamin A. Its yellow color is due to a substance that chemists call carotene. In recent years they have discovered that carotene becomes vitamin A either in the vegetable or in the animal body that consumes it. This vitamin is a particular help to the human body in resisting infections of the eyes, sinuses and glands of the mouth and throat.

Carrots rank much higher as a vegetable than they formerly did when the principal way of using them was in soups and stews. Now they may be used in many other ways; raw in salads, creamed, baked, mashed, steamed, boiled or fried in combination with apples, or stewed with celery or onions, according to the U. S. Department of Agriculture.

Learning can no longer be considered exclusively a child's occupation to be accomplished in the days of youth when time has small financial value. The question arises, can adults learn? Can they develop new skills? Psychologists say yes. Adults should know better than children what knowledge and what skills will be of value to them. Hence the desire to learn should provide the motive power to keep the mind working when interest in the subject itself lags. They should not have as much need as children do for such external bribes as praise, prizes and promotions.—*Science News Letter.*

Education and medicine are both based on the theory of service to persons of varying physical abilities, physical condition, mental capacity, social understanding and economic levels. The needs of children and the demands of advancing civilization are such that education and medicine, possessing this sympathy of understanding and utilizing procedures educationally sound, can work hand in hand to achieve an even finer type of living for our present and future citizenry.

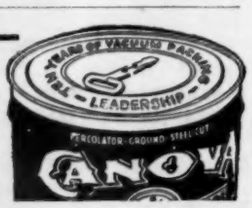
—*Pennsylvania's Health.*

Baby's glad and so is baby's mother when the doctor says, "Stokely's". There's never a scene at mealtime, never any coaxing or forcing with *these* strained foods. Baby takes them eagerly because they taste so good. Each of the nine tempting varieties is a choice food, properly prepared—rich in natural flavor and food value. Each is smoothly strained and protected in golden enamel lined cans. All ready to heat and serve, they end long hours of preparation, too. ASK YOUR DOCTOR. Write for FREE booklet.

Stokely Brothers & Co., Inc., 2351 South East St., Indianapolis, Indiana.

Always Drink—
KEMP'S
SUN-RAYED
PURE TOMATO JUICE
THE SUN-RAYED CO.
FRANKFORT, INDIANA

YOU KNOW—
IT SURE
IS GOOD
COFFEE!



JELKE'S
GOOD LUCK
VEGETABLE MARGARINE
is an
improvement over nature. Write for free copy of "The Food Value of Some Margarines."
JOHN F. JELKE CO., Chicago

GOOD POSTURE IS A REAL HEALTH ASSET

Good posture is more than merely "standing straight." Proper posture not only enables us to look well and move gracefully but also conserves the reservoirs of energy that seep away unconsciously through common postural defects. In proper balance, says the *Reader's Digest,* all parts of the body, including the internal organs, are held in working position.

To the medical profession the average middle aged man is known as a fatigue type. He is a pitiful figure, his head sunk forward, chin dragging, chest collapsed, stomach protruding and his weight on his heels. His spine, resembling an exaggerated letter S, throws his whole visceral apparatus out of place, endangering digestive and eliminative processes.

Can this sagging creature jack himself up so that he stands less like a depleted meal sack? First, let him throw back his shoulders by rotating the palms of his hands outward as they hang by his side. This will also expand the sunken chest. The paunch around the waistline must be sternly gathered up and held in place while the abdominal walls are being hardened by bending exercises. He should plant his feet parallel to each other and distribute his weight on the balls of both feet.

The sitting man is usually a sorrier spectacle than the same man standing. He slumps in his chair, crosses his knees and throws his whole weight into the worst possible spot, the base of his spine. He says he is "resting." For the best repose he should sit well back in his chair with the weight on the bottom of the thighs. In case desk work should require bending forward, he should bend from the hips, not the waist. Sitting thus properly a large part of the body is at rest without strain on nerves, muscles or spine.

Business and professional men who have tried this correct posture testify to an increased efficiency and stamina. Such a poised position discourages agents, old "grads" and casual visitors.

It should be remembered above all that disease, or the abnormal functioning of the parts of the body, originates with bad posture.

Our task as educators is to begin with life, to nurse it, to help it grow, to help it enrich itself, always so that more of life may result in the person himself and in all whom he touches. There is no richness but life itself.

—*William H. Kilpatrick.*

FATHER AND SON NEED TO GET ACQUAINTED

"Us men must stick together!" Many a mother admits feeling a warm little thrill at this remark of her stalwart little son and the suggestion of a smile that touches the father's lips. *The Parents' Magazine* discusses the tendency of "us" mothers to assume the preponderance of parenthood.

Since the care of children in infancy falls almost 100 per cent on the mother, she gets in the habit of assuming it. The father, who is away from home most of the child's waking hours, is apt to take the way of least resistance and do only the things that demand attention around the house. He does not see the things he could do with his son, or even how the two of them could make an adventure out of polishing the car together.

When the boy reaches adolescence and begins to show more definitely his characteristics as an individual, the father is disappointed in his son's ideas and the son is bewildered by his father's lack of sympathy. They are two strangers tied together only by the accident of birth and with no mutual bonds of understanding.

This happens constantly. The time to stem the trouble is when the child is still young. It is within the power of the mother to direct this relationship. She must learn to trust her husband's willingness to be friends with his children and his intelligence in the care of them.

There is probably not a father living who can resist the hero worship his son will extend to him if given reason and opportunity. If the mother will analyze the situation, she may find that she herself has prevented such opportunities because she anticipated that the child would annoy the father and therefore kept them apart as much as possible. The father, however, can stand the child's wild ways as well as the mother can. The pride a boy takes in his father's praise is of totally different quality from that engendered by his mother. It is something for which to strive.

Regardless of previous indifference, the mother can get her husband and son started to knowing each other, not from a sense of duty but from a sense of real pleasure. She should not fear to lose her son because he has found his father. He needs them both, always.

Education for leisure and the enrichment of adult life . . . is a fundamental problem affecting the welfare of the state and its perpetuity.—*William F. Russell.*

Give Her CALCIUM!

And give it to her this pleasant delicious way—*every day*—to help build strong bones and teeth.

The best source for CALCIUM is milk — but because of taste prejudices, many do not drink enough milk daily to supply the body with needed CALCIUM.

To these, we recommend **KRIM-KO** — a delicious chocolate flavored drink, made from pasteurized milk from which part of the fat has been removed and to which chocolate, cocoa, sugar, tapioca, salt and small amounts of flavoring have been added.

KRIM-KO is rich in CALCIUM. Ask your dairy for **KRIM-KO** TODAY!

KRIM-KO
REG. U.S. PAT. OFF.
•CHOCOLATE FLAVORED DRINK•

If there is not a dairy in your town that bottles Krim-Ko, write to the Krim-Ko Company, 4830 S. Turner Ave., Chicago, Ill., and give us the name of your dairy.

ACCEPTED AMERICA'S MEDICAL ASSN. Committee on Foods

Krim-Ko is chocolate flavored, sweetened, partially defatted milk (Added tapioca—salt)

DR. THURMAN B. RICE'S

Booklets on Sex Education

Parents, teachers, physicians—all who need material on sex education for children and young people—will find the help they are seeking in this sane series of booklets by Dr. Thurman B. Rice. He approaches the subject in a way neither ultra modern nor definitely old fashioned, and successfully combines the idealistic with the practical.

THE STORY OF LIFE—for boys and girls of ten years
IN TRAINING—for boys of high school age
HOW LIFE GOES ON AND ON—for girls of high school age
THE AGE OF ROMANCE—for young people of college age
THE VENEREAL DISEASES—for young people of college age

25 cents a copy

The entire set of 5 for $1.00

(Including special filing case)

ORDER FROM

AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street **CHICAGO**

OUTDOOR HOBBIES LURE BOTH YOUNG AND OLD

Perhaps 99 out of 100 impulsive beginnings at collection hobbies are false starts and soon die out. But no matter how grotesque these hobbies seem, parents cannot afford to risk discouraging the one, the true one which being an acorn may become an oak. Especially is this true with regard to nature lore, according to *The Parents' Magazine.*

Marbles, safety-match clips, celluloid lapel buttons, movie star photos, autographs and advertising slogans, trolley transfers and discarded auto license plates are life-enhancing riches to the young collector. If a child can get into the outdoor world, however, his acquisitive urge is likely to express itself in outdoor terms. To what he brings in he attaches the importance of a first-hand contribution to human science, for he is not dealing with man-made second-hand things or reading man-made books. He is handling a bit of wild nature that perhaps no one has found before.

Like many another "infant industry," collecting needs space and equipment. The shelves, aquariums, cages, tools, books and other paraphernalia are as necessary to the young collector as are golf clubs, racquets and garden gadgets to his elders.

Having found the world outdoors interesting once is to hold it so for a lifetime. Parents who not only shower sympathy and inspiration on the youngster's efforts but enter on some field of study with him find that their outdoor life may have a fresh start even at 40.

"FIRST TEETH"

In spite of the enthusiasm with which the appearance of baby's first tooth is announced to friends and relatives, by the time the entire set has appeared, most of the early thrill has evaporated into dangerous indifference, says the *Weekly Bulletin* of the Maryland department of public health.

Baby teeth need to be protected from decay as carefully as the "second" set. Three important reasons are to safeguard the growing child against unnecessary pain and suffering resulting from tooth decay; to help the second teeth come out in the proper position; to protect the child against abscesses which may affect the entire system.

Proper care of the baby teeth requires a careful diet, thorough cleansing twice a day and continuous advice and corrective care by the family dentist.

EHMANN RIPE OLIVES

For the original goodness and rich natural oils of ripe olives at their best, try the Ehmann brand. These olives are tree ripened and carefully selected. Guaranteed to be free from artificial coloring matter or preservatives.

EHMANN Olive Company Oroville, California

"Let's pop some corn!"

What could taste better on a cold winter evening? But be sure it's TNT popcorn — Tender, Nutritious, Tasty and IT DOES POP! Buy it in 10-oz. cans. Ask your grocer.

TNT POPCORN *Grown and Packed by*
BARTELDES SEED CO.
Lawrence, Kansas

CLOVERDALE
Pure Mountain Water Sparkling

Wholesome and invigorating—comes from the lofty mountains of Pennsylvania. Used in making Cloverdale Sarsaparilla and Cloverdale Ginger Ale — both Pale Dry and Amber.

CLOVERDALE SPRING COMPANY
Plant: Newville, Pa. Office: Baltimore, Md.

DO YOU LIKE GOOD CREAM CHEESE?
HAVE YOUR DEALER SHOW YOU THE NAME
Breakstone's
WHEN HE CUTS YOUR ORDER

Hurff's Tomato Juice has been accepted by the Committee on Foods of the American Medical Association. Hurff's Tomato Juice is made from carefully selected vine ripened New Jersey tomatoes, and is a dependable source of vitamins A, B and C.

EDGAR F. HURFF
Swedesboro, N. J.

HURFF BRAND

TOMATO JUICE

Golden State
EVAPORATED MILK
California's own brand
Golden State Company, Ltd.
SAN FRANCISCO — LOS ANGELES

"A Child is to be Born"

Of the most absorbing importance to expectant mothers

AN ENCOURAGING AND SYMPATHETIC BOOKLET **15c**

American Medical Association · Chicago

WHAT TO TELL THE PUBLIC?

Let us feature health rather than disease, so far as that is reasonable, suggests the *Journal of Health and Physical Education.* It would be fine in education on preventive medicine if sometimes the medical profession could be absolutely certain about a recommendation "always working."

In health education there are some facts which are accepted with *almost* complete certainty and which are true for nearly all persons. Then there are some things about which the profession is not so sure. And lastly there are items of so-called information in the field of health education that are in reality fallacious.

The question arises: What and when to tell the public? "Grade A" medical facts mention the problem of the diet. A great deal is not yet known about nutrition, but it is quite certain that a balanced ration is of fundamental importance to health. There seems also to be a high degree of certainty as to the hygienic and therapeutic value of sunlight. As to communicable disease, much has been proved about water and milk supplies as mediums of infection and about carriers in typhoid, diphtheria and other diseases. On the side of prevention definite facts can be offered to the public in the field of immunization as applied to diphtheria, smallpox and typhoid and, with somewhat less assurance, to measles, scarlet fever, poliomyelitis and other conditions.

The slogan "find disease early" is a sound objective. The medium advocated is the periodic health examination, a medium sound in theory but as yet very frail in practice. The public is not yet educated to go to the doctor early enough; the doctor is not yet sufficiently interested or informed or equipped to carry out the requisite examination and tests.

There should exist in every community the facilities for individual medical and health guidance. General broadcasts by radio, literature, the press, advertisements and all the wholesale devices available will not serve to answer intimate questions on health and on the prevention of disease. The private physician should eventually fit in here most effectively.

An example of "Grade B," or near facts, is the promotion of cleanliness: "Take a full bath more than once a week." What health condition will that promote, and how will it prolong life? Certainly the bath is socially and esthetically desirable, but how does this com-

pare with the certainty that vitamin D will prevent rickets?

Therefore health is a means and not an end, and is to be striven for, or at any rate, respected as a basis for growth, character, service and happiness. It should be the aim of all health education to develop health-informed, intelligent and courageous adventures in life.

HEALTH COMMANDMENTS

1. Help yourself to health. Form habits that will fight for you, not against you.
2. Do not expect to have good health without effort. Health must be earned.
3. Adopt the policy that an ounce of prevention is worth a pound of cure.
4. Make food your servant, not your master. Eat for strength.
5. Breathe deeply, for air is life's first requisite and Nature's best tonic.
6. Exercise for health, not for strength. Exercise sends clean blood to the brain.
7. Seek sunshine, for sunshine and disease are always enemies.
8. Water—use plentifully daily; warm for cleanliness, cold for tonic.
9. Keep a clear conscience, for true rest is mental as well as physical.
10. Work planfully, read much, and play often. Play keeps old age at bay.

—*Food Facts.*

The tragedy of man is that he has developed an intelligence eager to uncover mysteries, but not strong enough to penetrate them. With minds but slightly evolved beyond those of our animal relations, we are tortured with precocious desires to pose questions which we are sometimes capable of asking, but rarely are able to answer. The more we discover, the greater is our hopelessness of knowing origins and purposes. The more our ingenuity reveals the orderliness of the nature about us and within us, the greater grows our awe and wonder at the majestic harmony which we can perceive more clearly with each new achievement of art or science, but which, in ultimate causes or in goal, eludes us. To feel this awe and to wish to fit into the harmony of natural things, with a vision of the whole, is apparently a definite phenomenon of human psychology.

—*Hans Zinsser.*

What's in a Can of Canned Food?

Modern knowledge is shattering many false ideas about canned foods. Be sure to read the highly informative series of ads in HYGEIA on values of canned foods. See second cover this issue.

AMERICAN CAN COMPANY, New York City

DURKEE'S PURELY AMERICAN VEGETABLE MARGARINE

Made entirely from American produced ingredients. Delicious. Wholesome. For cooking, frying, baking and table use.

Ask Your Grocer for Durkee's Margarine.

Durkee Famous Foods, Inc. Chicago, Ill. Norwalk, Ohio

BREAD FOR FOOD ENERGY

Doesn't your child like cereals? Then you haven't given him WHEATIES yet!

Give your children plenty of good, wholesome baker's bread. It satisfies their lusty appetites and supplies the food energy growing youngsters need. See third cover for facts about bread.

WHITE BREAD

An interesting set of questions and answers in booklet form. A copy may be obtained free by request to the

AMERICAN INSTITUTE OF BAKING
1135 Fullerton Avenue . . . . Chicago

PLEASE SEE PAGE 1

A WHOLESOME, nourishing breakfast dish with a flavor you'll love . . .

MALTEX CEREAL

A good source of Vitamin B and protein for building and repairing body tissue. Has a delicious barley malt flavor that will tempt you to eat heartily.

The Maltex Co., Burlington, Vt.

Drink Krim-Ko* for Calcium

A delicious beverage, rich in bone and tooth building calcium. Children drink Krim-Ko without coaxing. See page 93 for additional information on Krim-Ko.

* chocolate flavored, sweetened, partially defatted milk (added tapioca—salt).

KRIM-KO CO., 4830 S. Turner Ave., Chicago

Ox-Heart PEANUT BUTTER

Manufactured from selected No. 1 peanuts

Same personnel have manufactured this Peanut Butter for the past 20 years, assuring a uniform quality.

All containers used are thoroughly sterilized before packing goods.

(Of course you are familiar with the high protein content of peanut butter and the various vitamins it contains.)

OSWEGO CANDY WORKS, Inc., Oswego, N. Y.

PLEASE MENTION HYGEIA WHEN WRITING ADVERTISERS

"BROTHERS AND SISTERS HAVE I NONE"

The only child is proverbial as a problem and is regarded, soundly no doubt, as something to be avoided. Many a present-day family, however, is virtually a series of "only children," according to *Child Study* magazine.

Finding suitable companionship for the only child makes certain demands on the parents. In recent years the nursery school and the play group have kept many an only child from solitude or from the sole companionship of his elders. Parents will do well to establish friendly relations with other fathers and mothers. Sometimes sacrifices, financial and otherwise, must also be made.

One of the deepest and most persistent of family conflicts begins with the family triangle of father, mother and one child. Unmindful of the care and devotion which his very existence entails, the child knows only that he is smaller, weaker, less clever; that he must yield the center of the stage to his parents and their friends, be helped last at the table, often occupy the back seat of the automobile alone, and never interrupt when conversation goes on which is incomprehensible to him. He nurses a subtle sense of "two against one."

Parents who understand this can, it is true, help to mitigate the inevitable. They can see that their child frequently has the companionship and undivided interest of each of them alone and undisturbed. What is equally important, they can see to it that the child gets an occasional vacation for short intervals away from home and away from the conflicts which center around the very persons of his parents.

Adopting a child to serve as a companion for one's own child seems a reasonable motive, but there are attendant pitfalls. Any tinge of exploitation, any implication that the adopted child is there merely to fill the other child's need and not his own, will do not only profound harm and injustice to the one, but even more serious injury to the other child.

A deep respect for the individual is the one guiding principle by which all children, however out of the ordinary their circumstances or their temperaments may be, can be safely guided.

O health! health! the blessing of the rich! the riches of the poor! Who can buy thee at too dear a rate, since there is no enjoying the world without thee? Be then not so sparing of your purses, honorable gentlemen.—*Ben Jonson.*

CORRECTION

Oct. 25, 1935

Editor, Hygeia
535 N. Dearborn Street,
Chicago, Ill.

Dear Sir:

In the article on "The Physician in Literature," which was published in the October *Hygeia*, I made the statement that Osler's favorite copy of Sir Thomas Browne's "Religio Medici" was buried with Dr. Osler at his request. This statement was corrected in a letter from Dr. W. W. Francis, director of the Osler Library, McGill University. His statement is so interesting that, with his permission, I am quoting in part from his letter to me:

"By the way, Osler's first and favorite copy of the Religio Medici is here, and your statement that 'at his request it was buried with him' is true only in the sense that his ashes are also here. He was cremated, not buried. That copy was placed *on*, not in, his coffin at the funeral, and not at his own request. The usual statement is that it was burned with him. I hope some time I may have the pleasure of showing it to you."

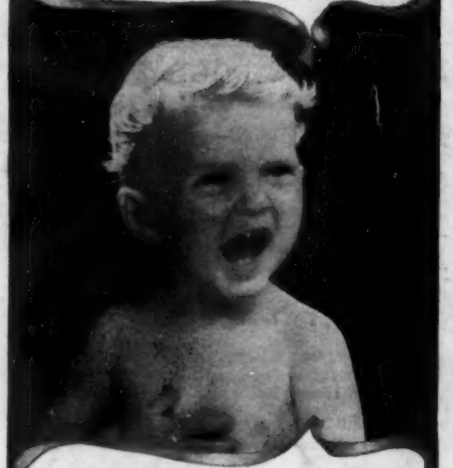
Sincerely yours,
WINGATE M. JOHNSON.

It is only rarely that a child is better than his home influence. He may be smarter than his parents or more successful or more beautiful, but his moral strength and his habits of life and his intellectual leanings will largely be those that he inherited and that he developed or acquired in the home. Begin to think of your child as the descendant of a thousand generations that have made on it an indelible mark of tendencies, instincts, passions, ambitions, habits and abilities or disabilities. This link in the long chain of your heredity is in the forge and on the anvil of home environment. It can be molded, shaped, strengthened, or it can be left weak and full of flaws. Are you going to make a stronger link in the long chain or a weaker one? —*Luther Burbank and Wilbur Hall.*

There is an idea abroad among moral people that they should make their neighbors good. One person I have to make good: myself. But my duty to my neighbor is much more clearly expressed by saying that I have to make him happy if I may.—*Robert Louis Stevenson.*

Man stumbles over molehills, never over mountains.—*Chinese Proverb.*

"COME OUT OF THE KITCHEN MOTHER!"



"THERE'S so much puttering around with pots and pans in our house, that I hardly *ever* get to see my mother! She should spend more time with me, and less in the kitchen. I'm growing now. Somebody has to teach me how to play and think and act.

"I think I'll tell mother that Heinz Strained Foods taste better to me than most of the foods prepared here in our house. They even *look* better; the fresh color just seems to make me *hungry*, and I'll bet that Heinz cooks know just as much about straining and cooking vegetables as my mother does.

"Besides, I heard the doctor say that Heinz Strained Foods have been *officially* accepted by the American Medical Association's Committee on Foods—meaning that in vitamin and mineral retention, Heinz Strained Foods are all right with the doctors. Mother!—come out of the kitchen a moment while I tell you . . ."

HEINZ 57 STRAINED FOODS

9 KINDS—1. Strained Vegetable Soup. 2. Peas. 3. Green Beans. 4. Spinach. 5. Carrots. 6. Tomatoes. 7. Beets. 8. Prunes. 9. Cereal.

SEND FOR THIS BABY DIET BOOK—It contains authenticated up-to-date facts regarding vitamins, minerals and other nutrients your baby needs. Also much reliable information on infant care and feeding. To get a copy, send labels from 3 tins of Heinz Strained Foods *or* 10 cents—to H. J. Heinz Company, Department H-301, Pittsburgh, Pa.

WHAT DOES YOUR CHILD HEAR ON THE RADIO?

It may surprise parents to know that the strongest criticism of children's radio programs has come from within the industry itself. "We do not inject diphtheria germs into our children's bodies," said an official of a broadcasting company, "and we do not pour foul air into their lungs. Why then do we, through some of our radio programs, systematically poison their minds?"

The Parents' Magazine also quotes another official who remarked, "Compared with the average evening's entertainment for grown-ups, there has been a decided lack of imagination in preparing programs for children, and there has been scant recognition of the varied interest and the general high level of intelligence of the American child."

The present furor about radio programs for children is symptomatic of a change in attitude that is showing itself in radio generally. Today the microphone is a social force of startling and incalculable potentiality. Nowhere has the radio more far-reaching power than in relation to childhood. Studies have shown how widespread is the feeling about many features of the programs, such as the oversensational and harrowing adventures, the stalking ghosts, the howling maniacs. Parents object, too, to the nasal voices, poor diction and vulgar comedy.

In Europe, children are listening with rapt attention to dramatizations of the classics, to ballads and to classic music. It is true their tastes are different from those of American children, but the bare fact of their continued interest seems significant. It is an actual fact that some of the unsensational and instructive programs in the United States are among the most outstandingly popular with children.

Two factors, the need for "surefire" programs and the urgent desire to curtail expense, constitute the Scylla and Charybdis of children's radio programs.

The ladder of life is full of splinters, but they always prick the hardest when we're sliding down.

—*W. L. Brownell.*

It is chiefly in the school and through the school that society can provide for the physical as well as for the mental and social well being of the child.—*Freeman.*